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NEWSPAPER

NEWS IN BRIEF

Telex in Court To Stop Pact

By Ronald A. Frank
Of the CW Staff

ST. PAUL, Minn. – Telex Corp. late last week asked in federal court here that the IBM/CDC settlement be set aside because "CDC in conjunction with . . . IBM destroyed CDC's data base," thus preventing Telex from pursuing its suit with IBM. The CDC action, in destroying its evidence data base, was "induced by IBM and was undertaken by CDC in connivance with IBM," Telex charged.

The destruction of the data base "was in direct violation of, and in blatant disregard . . . " of the previous court order under which CDC was to provide Telex with its information and data base, Telex charged.

As condition of the settlement between IBM and CDC, CDC agreed to destroy the anti-IBM data base "for the purposes of depriving Telex of the use of said data base," Telex charged.

Telex asked the court to order CDC and IBM to prepare a comparable data base and make it available to Telex for use in its IBM suit. The Telex petition for dismissal of the settlement will be heard in U.S. District Court here on Jan. 26.

370/115 Expected— At Under $7,000/Mo

WHITE PLAINS, N.Y. – IBM is reportedly set to introduce the 370/115. The machine will feature integrated peripheral controllers and a price tag believed to be under $7,000/mo. The 115 apparently will have about 50% of the power available in the 370/125.

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IBM/CDC Pact: 'No User Disruption'

Service Bureau Sold by IBM

By E. Drake Lundell Jr.
Of the CW Staff

MINNEAPOLIS – The oldest of the antitrust suits against IBM ended here last week when Control Data Corp. accepted an out-of-court settlement and in effect handed the broader issues raised by the case to the Justice Department for resolution.

Is settlement pattern emerging? Story on Page 4. Industry reaction on Page 25.

In total, Control Data may have received as much as $146 million in either direct cash outlays or in promises of future business from IBM. In turn, CDC had to put up $16 million in cash to buy the IBM subsidiary, Service Bureau Corp., which will be run by present IBM employees and offer the same services.

The settlement in the case, which was started Dec. 11, 1968, is extremely favorable to CDC, most sources agreed, even though it does not give the firm all it sought in the original suit – the complete breakup of IBM in the computer industry.

Officials of both companies said the settlement is not expected to disrupt user services.

Under the terms of the settlement, IBM is paying Control Data $15 million as reimbursement for expenses including legal fees. In turn, CDC agreed to pay $16 million for Service Bureau Corp.

Under the terms of the agreement, IBM will not reenter the service-bureau business in the U.S. for the next six years.

IBM also agreed to give CDC six months' free rental of the equipment presently installed at Service Bureau, an amount that industry sources said could equal about $5 million over the time period.

IBM also said it would continue to use services of Service Bureau Corp. at the present level, which amounts to approximately $5 million yearly for the next five years, or $25 million in total.

(Continued on Page 2)

What CDC May Get

Service Bureau Corp.	$ 45 million*
6 months' free rental of equipment at SBC	5 million**
Reimbursement for legal fees	15 million
5-year contracts	30 million
Fringe benefits for SBC workers	26 million
IBM business with SBC for five years	25 million
Total	$146 million
CDC paid for SBC	–16 million
Net to CDC	$130 million

*This is based on the value of Service Bureau Corp. at 30 times its 1972 earnings of $1.5 million after tax. Stock in companies is generally valued at between 20 and 30 times earnings. Wall Street sources feel IBM could have gotten 30 times SBC earnings if the firm had been sold to the public.

**Industry estimates.

Deal May Be User Feast

By Don Leavitt
Of the CW Staff

MINNEAPOLIS – The antitrust settlement that resulted in SBC's going from IBM to CDC is more than alphabet soup to the users involved. It may be a real feast, according to several industry observers.

As separate operations, Service Bureau Corp. and the time-sharing services of Control Data Corp. have, in part, duplicated and, in part, complemented one another. Together, they may well be symbiotic, so the whole is greater than the sum of the parts.

SBC has multiple local data centers doing business-oriented batch work; Call/370 time-sharing service; and a large sales force used for working with customer problems. SBC service is based on IBM 360s and 370s.

Analysis

CDC has developed two separate time-sharing or remote-computing networks. Kronos, like Call/370, is for conversational problem-solving. Cybernet is for remote-batch work. Both services utilize

(Continued on Page 2)

Multics Goes Commercial, Honeywell Pushes Security

By Don Leavitt
Of the CW Staff

WELLESLEY, Mass. – Security features and the user's ability to write his own operating system commands were stressed by Honeywell last week as it finally introduced Multics, the Multiplexed Information and Computing Service system, as a standard commercial product.

The virtual-storage capabilities of the system were described but not highlighted, and the availability of PL/I and APL as the programming languages for the system was downplayed.

On-line information is a feature of Honeywell's Multics system.

MIT Legacy

Developed at MIT's Project MAC over a seven-year period, Multics is a combination of hardware and software, communications capabilities and supervisory techniques that make it, in Honeywell's view, the first of a new class of "user-oriented computing systems."

Multics runs on the 6180, an enhanced version of the 6080 mainframe, that includes hardware changes to support segment referencing, data-protection rings and paging capability.

The system is, by definition, intended only for a selected group of large-scale sophisticated users, such as government and academic installations and commercial time-sharing networks, a Honeywell spokesman said.

MIT has been using it, based on the original 645 hardware configuration, for about 40 months, typically with 50 concurrent users, Robert Scott, manager of computer services at MIT, said. National CSS has recently signed an agreement to install Multics on its commercial network,

(Continued on Page 4)

Exec 8 Revamp Opens Up Univac 1110 to 158 Range

By Vic Farmer
Of the CW Staff

ROSEVILLE, Minn. – By revamping the Exec 8 operating system, Univac has opened up the 1110 Series to users in the IBM 370/155, 158 range.

The 1110 1x1 low-end configuration announced last week is based around the use of only one Command/Arithmetic Unit (CAU) and one Input/Output Access Unit (1/OAU). These units are the standard CPU and I/O building blocks of the 1110 Series originally announced in 1970.

The revamp of the Exec 8, according to Univac, consists of changes in some algorithms so that main core-residence requirements are reduced and more of Exec 8 can be relegated to disk storage.

This proportion of main storage to disk is user-variable, but if the proportions are

(Continued on Page 4)

Oldest of IBM Antitrust Suits Settled Out of Court

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In addition, IBM has provided for the reimbursement to Service Bureau for retirement and other fringe benefits of current Service Bureau employees, approximately $2.6 million per year for 10 years – or a total of $26 million.

The Service Bureau Corp. presently has 40 offices in the U.S. and last year earned $1.5 million after taxes on revenues of $63 million, the firms said.

IBM has also given CDC four five-year research and development contracts that will be billed on a time and materials basis. This is expected to bring CDC $6 million per year, or a total of $30 million over the term of the contract.

"The settlement is timely and conclusive and gives fair value to both sides." – Frank T. Cary, IBM president

Included in the research and development effort will be projects for "developing advanced technology in the areas of magnetic storage, terminals, transaction-oriented software and data-services networks," according to an announcement by the two firms.

Both IBM and CDC will have the rights to the developments made under the contracts and CDC will be free to make them available to others in the industry on a license basis.

IBM and CDC also agreed to extend their worldwide patent cross-licensing agreement until June 30, 1978, under the settlement agreement.

The parties also announced that all the pending claims in the CDC suit against IBM and the IBM counterclaim against CDC and its subsidiary, Commercial Credit Corp., would be dropped.

The claims were dismissed "with prejudice" which means that neither party can bring up the same issues again in the future.

Case History

The case was filed by Control Data on Dec. 11, 1968, but had been under investigation at Control Data since 1966. The suit is thought to have pushed the government into filing its suit against IBM a month later.

"The decision to file a lawsuit in 1968, although difficult at the time, has now proved to be one of the best management decisions in our history," according to William C. Norris, president of Control Data.

"We are extremely pleased with the settlement. It was fair and our company will achieve substantial long-term benefits from the business transactions," he added.

An insider at CDC indicated that "jubilation and exhilaration" were words too tame to describe the reaction around the company when the settlement was announced.

For the other side, IBM President Frank T. Cary said: "I am gratified with the settlement reached with CDC. This suit has gone on for over four years, and has represented a significant and growing expenditure of management time and legal expense. The settlement is timely and conclusive and gives fair value to both sides."

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Combination to Serve Users Better

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CDC 6000 Series mainframes.

As separate entities, SBC and CDC have had what one observer called "strange" limitations.

In its data centers, SBC handles the entire operation, through custom-programmed or prepackaged applications. Call/370, while providing a common data base accessible from multiple-user locations, has been limited in computational power and file size. It is good for "light" time-sharing, the observer felt, but gets "almost prohibitive" in cost as the complexity of a program increases.

Kronos and Cybernet, by contrast, have strong compute capabilities in their CDC configurations and the service is comparatively cheap. While SBC features customer support, CDC has provided little under its time-sharing services. They are for the professional and he must know what he is doing, the observer explained.

Serving People

The settlement combines the two approaches and puts the SBC sales force and user-support philosophy into the CDC organization. It puts CDC into the "people-service" area, and provides the SBC user with a broader range of services available from the vendor he already knows.

Both sides of the newly combined operation support Fortran IV and Basic in time-sharing. SBC also includes a PL/I processor, while CDC backs Cobol, Algol and its own Compass language. Both have rather extensive libraries of public programs or routines.

Kronos or Cybernet users can work from a variety of terminal devices including CDC Marc I, II, IV or V units, conventional teletypewriters or the Cope series from University Computing. CPUs including IBM 1130, Univac 9200 or 9300 and Honeywell 200/2200 mainframes can also be linked into the systems, CDC noted.

Call/370 can be accessed through IBM 2741 units operating in correspondence or BCD code, Teletype Models 33 or 35, or other terminals equivalent to these devices. It also supports 300 bit/sec Ascii terminals including Datapoint 3300s, Hazeltine 2000s, GE Terminet 300s or Univac DCT 500s, the company said.

CDC is expected to run each of the services separately at least until it can determine the impact of any consolidation proposals. Users may gain some support immediately, but there won't be any basic changes "in this calendar year," in the opinion of an official of a competing time-sharing service.

Checkless Society? IT's Close

HEMPSTEAD, N.Y. – The Hempstead Bank has ended its experiment with a checkless/cashless society system even though all concerned were pleased with the operation.

The test ended, officials explained, because the equipment used was designed around a punched-hole code (similar to telephone dialer cards) rather than the magnetic stripe code which has come into favor with the American Banking Association since the experiment began.

"Under the circumstances, we've learned all we could from the test as originally structured," a Hempstead spokesman said recently.

During the 13-month test, checking account customers of the bank's Syosset, N.Y., branch office used plastic Instant Transaction (IT) cards to make purchases at 32 stores, including several supermarkets and a variety of other neighborhood retailers.

IT went into operation Nov. 1, 1971 and looked very much like an electronic credit card authorization system. A customer making a purchase gave his IT card to the merchant who in turn put it in a terminal unit connected with the bank's computer.

At that point, however, the customer had to key in a unique three-digit number. If the key-in matched a code etched on a piece of copper wire embedded in the opaque card itself, processing would continue. Otherwise processing would stop.

After matching the secret code, IT would compare the transaction amount to the customer's available funds. If they were large enough, funds were immediately transferred from the customer's account to the merchant's, and a printout was produced as hard-copy verification of the transaction.

A system of transaction codes enabled IT to handle cash withdrawals, delayed payments, payments on account and returned purchases, in addition to normal sales, all without producing any paper documents for later processing.

The Syosset test proves the practicality of the IT concept not only for the bank, its customers and the merchants, but for the banking industry in general, the Hempstead spokesman said.

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'Technology Barely Adequate'

Intensive R&D Expected to Solve USAF Software Gap

By Marvin Smalheiser
CW Correspondent

LOS ANGELES – The U.S. Air Force faces a severe software gap in its Command & Control (C&C) requirements for the 1980s, according to a recent development planning study.

But according to the study, an intensive R&D program would increase the Air Force's current expenditure of $10 million a year in R&D information processing to a level of $25 million a year by fiscal 1976.

A review of the study was given at a recent meeting of the Los Angeles Chapter of the Association for Computing Machinery by Lt. Col. Allen C. Haile of the Air Force Space and Missile Organization and Dr. Barry Boehm of Rand Corp., study director.

Both Haile and Boehm emphasized that software is a greater problem for C&C than hardware and that software R&D is seriously inadequate.

During the 1980s, Boehm said, the USAF "will lean as hard on its software as it will on its hardware."

Inadequate Support

The chief problem, the report found, is that "information processing technology is barely adequate to support Air Force C&C functions today."

These functions include such activities as the Strategic Air Command (SAC), Tactical Air Command and communications for Theater Air Operations.

Estimates of the Air Force's annual spending on software are between $1 billion and $1.5 billion, compared to $300 million to $400 million on computer hardware, the report said.

But where C&C is concerned, "indirect costs of software slippages far exceed direct costs, because software is on the critical path in overall C&C system development.

"On one current project, providing an expected seven years of C&C capability for a total cost of about $1.4 billion (or about $200 million per year), software delays have caused a six-month delay in making the system available to the user command, resulting in a loss of about $100 million worth of C&C capability.

"Moreover, in order to keep the software from causing further delays, several important functions will not be provided in the initial software delivery," according to the report.

Software is frequently unresponsive, the report found, mainly because of the dearth of techniques for requirements analysis and design of C&C information processing systems.

The report noted that "95% of the 465L software delivered to SAC had to be rewritten to meet SAC's operational needs; 67% of the Seek Data II software delivered in Vietnam had to be rewritten."

The following problems critical to providing effective support of C&C were mentioned:

- Inadequate requirements analysis/design/exercise technology.
- Software/system certification.
- Software timeliness and flexibility.
- Hardware survivability.
- Data security.

Other problem areas involve communications processing, source data automation, image processing, computer system performance analysis, associative/parallel processor exploitation, software transferability and computer-aided instruction in computing.

'Appropriate . . . Standards'

Regarding R&D, the report urged the "appropriate development of hardware and software standards, software library and tool inventory, data collection and dissemination and related activities to orient the huge bulk of other information processing R&D activities toward critical Air Force problems.

And " . . . in many C&C areas the Air Force does not now have an adequate data base on how it uses information processing capabilities to support C&C operations."

The remedy, according to the report, is a "serious coordinated effort to measure how its current and evolving command and control software inventory, development efforts and maintenance activities are distributed."

Savings of $167 million annually through added R&D are cited as representative of potential benefits.

Increasing software productivity from 10 to 11 instructions per man-day through added R&D would save $100 million a year, the study said.

Other R&D recommendations of the study include:

- A development planning program for the software-first machine.
- A development planning program for automated system exercise aids.
- A development planning program for structured programming.
- A C&C usage study.
- Efforts to define terminology and procedures for information gathering and analysis of C&C software development and usage.

Delaware Will Get 3d-Party Computers

By a CW Staff Writer

DOVER, Del. – In what could be considered as "living theater" the incident of Arthur Hill and IBM [CW, Dec. 6] appears concluded, with the State of Delaware the apparent winner. The state expects to cut hardware leasing costs by more than $100,000/yr with third-party equipment.

Hill, the state's DP manager, wanted to replace IBM's computers with machines from Greyhound Leasing.

IBM's local salesman and area manager, in an effort to keep the account, Hill said, threatened Hill with professional ruin and tried to carry out this threat with visits to local politicians.

Amidst an exit profuse with apology and the rationale that it was all just a misunderstanding, IBM effectively removed itself from the cast of players after replacing the sales personnel concerned.

Hill now will get three interim third-party IBM computers to replace the IBM 360/40s presently used in the state's DP center.

Later in the year one of the third-party 360/40s will be replaced with a third-party 360/75 from Greyhound which, Hill stated, will further decrease DP costs for the state.

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Ampex' newest space saver...the 3420-compatible two-in-one tape subsystem for 360 and 370 computers

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Pattern Emerging in Settlement of Anti-IBM Suits

By E. Drake Lundell Jr.
Of the CW Staff

"six down . . .
. . . two to go"

That's how the scoreboard currently reads in the antitrust actions against IBM. In the past few years, six of the major suits against the firm have been settled and only two remain – the Telex suit, scheduled for trial April 16, and the main event, the government case.

The biggest question raised by the settlement between IBM and CDC is how it will affect the government and Telex actions, since the suits had been closely linked during the pretrial discovery procedures.

But the way IBM has handled the previous six suits may give some indication of future actions, even though the picture is presently cloudy.

Five of the cases – Applied Data Research, Programmatics, Data Processing Financial and General (now DPF). Control Data and Motor Replacement Corp. – have all been settled out of court at terms definitely acceptable to those firms.

In the Greyhound suit, the court found that Greyhound did not prove its case, but that decision is now being appealed.

It appears, one source said last week, that IBM wants to settle all of the suits it can out of court to keep from having to take its case before a judge.

"Otherwise," he said, "why would IBM have given Control Data such a favorable settlement? If IBM thought it could win, I would think they would have let the case go to trial instead of giving away all of that."

At the same time, one legal source said IBM might have agreed to such a settlement – after negotiating with CDC for more than a year and a half – in order to clear the slate and apply its full legal force to the main battle, the government suit.

In addition he noted, as did several other sources, the settlement of the CDC action will place a heavier burden on the Justice Department in preparing its case against IBM.

Analysis

In the past, all of the documents filed in the Control Data case have been edited and microfilmed and then passed along to Justice. In addition, Justice had relied heavily on the Control Data expertise for much of its information on the computer industry.

Without this help, Justice's case may have to be delayed even further.

Back to School

Often the Justice Department lawyers have admitted in court that they did not really understand the computer business and that they would have to learn more about it before they could possibly take their case to court.

The judge in the case has suggested that Justice get additional help in order to get quicker action in the case. The department said with the support being provided bv CDC it would not need additional help.

Now that that well is dry, sources said, Justice will either have to beef up its staff considerably on the case or delay the trial still longer.

Justice declined to comment on the effect of the CDC settlement.

Back at the Ranch

On the other hand, the letter CDC President William C. Norris sent to stockholders last week indicated the Justice Department suit might be further along than others may believe.

Since the outcome of the Justice Department suit was "uncertain" in 1969, he said, so "we found it necessary to proceed with our case, even though we would have preferred to avoid the huge investment in a Control Data lawsuit."

The statement implies CDC now feels more certain of the outcome of the Justice suit and so was willing to drop its suit against IBM.

So, in effect, Control Data has told the Justice Department that it has given Justice all the help it can and that the ball is now firmly in the hands of the government.

Some sources believe Norris wouldn't have accepted any settlement in the case unless he was positive the Justice Department had a reasonable chance of getting the full relief desired.

And that is nothing less than the complete restructuring of IBM into separate companies along product lines – a software company, a peripherals company and a CPU company – or some other form of relief just as drastic.

CDC's Relief Plan

Norris also revealed that Control Data has submitted to the Justice Department a "constructive, nonpunitive plan for restoring fair competition to the computer industry. This relief plan has been developed over the past four years through the team efforts of top members of Control Data's technical and management staff, outside legal counsel and a leading U.S. economist.

"This effort is by far the most comprehensive and thoughtful plan which has been submitted from industry," Norris added.

The CDC plan submitted to Justice indicated that while the breaking up of IBM into many small companies was technically feasible, it would probably not be politically popular and therefore could probably not be done.

In addition, the plan said that breaking up IBM into just one or two large companies would not solve the problems in the industry.

Therefore it recommended that injunctive relief be granted against IBM's allegedly unfair market practices and that IBM's participation in industries that are "complementary" to the computer business be stopped.

Honeywell Stresses Security of Multics

(Continued from Page 1)

the Honeywell spokesman added.

Under Multics, subprograms and data arrays are not linked in the conventional way but are carried as separate segments which can be dynamically linked after execution has started. This allows a user to create and modify a sequence of procedures based on intermediate results.

Access Rings Secure

Multics maintains a segment access-control file as well as setting a protection-ring level for each segment, and an access-ring level for each user. Access to specific data files is controlled by the owners of the files and is beyond the reach of anyone else, Honeywell said. This both prevents unauthorized access and permits desired sharing of data, the company added.

As with most virtual systems, paging under Multics divides the segments into fixed-length blocks and fits them into available real memory as needed. This prevents large programs from hogging real memory and allows more effective management of that system resource.

Multics is an operating system and software design that is modular in concept and implementation. The operating system is, in fact, treated as two major separate entities. The central resource manager is the "hard core" of the system and is protected against all modification.

The library of user system commands and subroutines, on the other hand, is carried in the rings that are accessible to at least some users. Each user can supplement or replace any or all of the standard system commands, Honeywell said.

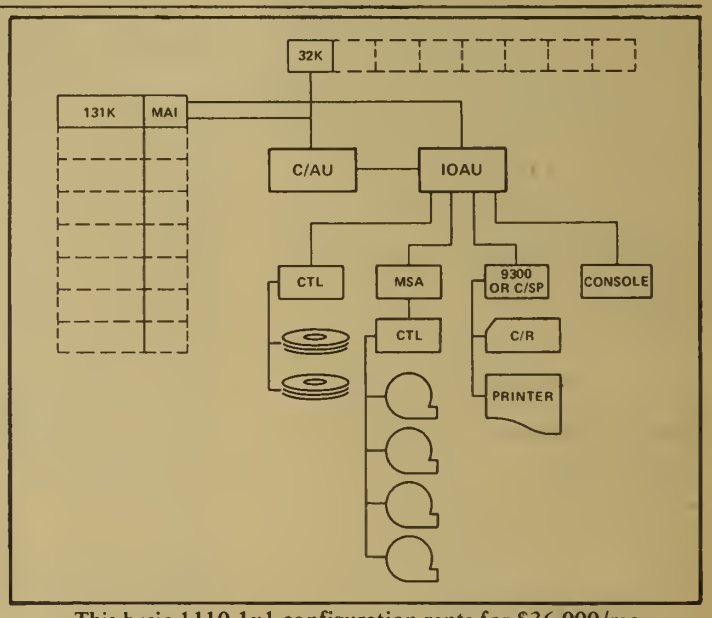
Since the user interface with the Multics system is through references to service command and subroutine segments, the system can be functionally expanded for each user by creating new segments, without altering or destroying old ones, the spokesman added.

The company said a typical small Multics configuration would include one 6180 central processor, 192K words of main memory, 1M words of bulk core storage, 200M bytes of disk storage, one input/output multiplexer, one Datanet 355 communications processor, five tape units, a card reader, card punch and printer, plus terminals. Purchase price of this configuration would be $3,565,000.

The system can support much larger configurations, including multiple processors. A typical large system might include dual processors, 384K words of main memory, 2M words of bulk core storage, 1.6 billion bytes of disk storage, eight magnetic tapes, two Datanet 355 communications processors and two card readers, punches and printers. Purchase price of this system would be $7,064,000.

Honeywell said a system configuration would be determined by the needs of the users and for practical purposes there is no maximum configuration.

Currently installed 6080 mainframes cannot be field-upgraded to be 6180s. First deliveries of the new system are scheduled for the first quarter of 1974.



This basic 1110 1x1 configuration rents for $36,000/mo.

Univac Revamps Exec 8

(Continued from Page 1)

misused, some throughput degradation can occur, according to a Univac engineer.

Although the 1110 Series is not "virtual"-oriented, Univac claimed benchmarks made against the 155 – even including a 20% performance penalty (an estimate of the effective performance increase of the 158 conversion using VS1) – revealed throughput performance was "competitive."

Program size, however, can affect throughput, according to Univac.

Univac gave the virtual-memory concept the edge in execution of large programs, but maintains that the Exec 8 operating system would be more effective in a general-business program environment.

Main features of the 1110 1x1 include:

- 36-bit word.
- 32K-word to 256K-word main storage with a word read cycle of 320 nsec and write cycle of 520 nsec.
- 128K-word to 1,024K-word extended-core storage with a cycle time three to four times slower than main storage.
- Complete upward convertibility progressing through the 1110 2x1, 2x2, 4x2 or 4x4 configurations (the first number indicating the number of CPUs, the second the number of I/O access units).
- The CAU (CPU) employs a four-deep instruction overlap with an "effective instruction execution rate of 300 nsec."
- Partial- . and double-word addressing.
- Each I/OAU can control eight to 24 I/O channels.
- Deliveries start within six months.
- Rental of minimum configuration is $36,000/mo with purchase tagged at $135 million.
- PL/1 will be available late this year.

In effect, the 1110 1x1 overlaps the 1108 introduced in 1964. A Univac spokesman implied that the 1108 system, while still in production, should be closed out at a nice discount for some "lucky" users.

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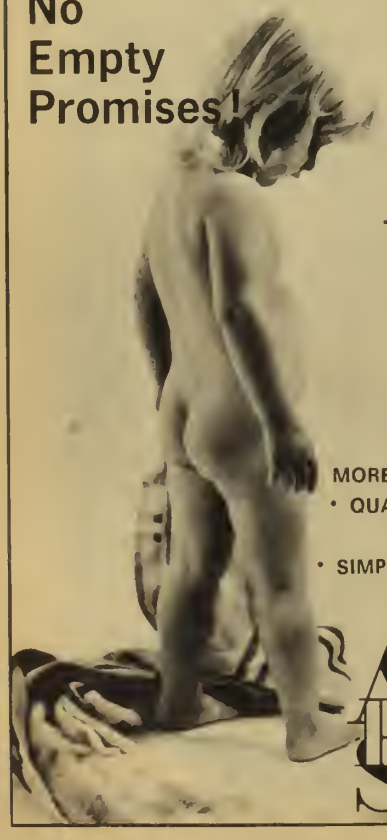

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Mass. Medicaid Funds Approved

BOSTON – The Massachusetts House Ways and Means Committee has approved a $1.5 million Medicaid computer program for the Public Welfare Department.

If approved by the Senate Ways and Means Committee, the funds will be used to set up a computer system to pay the bills submitted by doctors, druggists, nursing homes, hospitals and other Medicaid vendors.

The Vendor Payment System will supplement the system which pays recipient checks and which began operations several months ago [CW, Sept. 20].

Anthony M. Scibelli, chairman of the House committee, said the funds were approved with the understanding that the Welfare Department would contract with a "fiscal intermediary" – a private agency – to take over administration of certain portions of the program.

The Welfare Department has agreed to contract with a "fiscal intermediary" to handle drug bills and those incurred by persons over 65 who are also in the federal Medicare program.

'Pay Up or Else': In N.Y. Computer Warns Drivers...

NEW YORK – Nearly 8,000 motorists here will be denied auto registration this month unless they pay up parking tickets worth almost $320,000.

The combined efforts of the city's Parking Violations Bureau (PVB) and computers at the state Department of Motor Vehicles (DMV) produced a list of 7,896 scofflaws for the month of January and have denied registration to over 12,000 since the system went into effect six months ago.

The PVB, with the help of a service bureau, prepares a tape of those who have not paid three or more parking tickets. The tape is sent to DMV where registration information is stored on the department's computers. Notices are sent to the violators and auto registration is withheld until the city receives payment.

The largest scofflaw identified by the system this month owes the city $6,005 in 126 unpaid parking tickets.

...While Calif. MDs Issue Same Warning to Computer

SAN JOSE, Calif. – A group of local anesthesiologists has expressed dissatisfaction with the state's new computerized billing system.

In a meeting with Dwight Geduldig, state director of medical services, the doctors claimed payment from Medi-Cal was slow and inadequate.

Some physicians told of having billed in August for services rendered in July and still have not received payment. Others said payments have been below overhead costs and were below payments in other specialties.

News Wrapup

Although Medi-Cal was designed to speed and standardize payments to physicians, there have been the usual programming bugs associated with new systems, according to officials of the Santa Clara County Medical Society, which is working with the state to resolve some of these problems.

Geduldig will meet with physicians again in mid-January to answer their complaints. The anesthesiologists will then meet to decide their next course of action.

DP Used in Insurance Flimflam

Special to Computerworld

LANSING, Mich. – Using the reputation of the computer as an almost "infallible analyst," an independent Michigan life insurance agent "convinced" about 100 Michigan policyholders to replace their existing policies with term policies from an Indianapolis firm for which he worked.

Robert Rowe, deputy commissioner of the Michigan Commerce Department Insurance Bureau, said: "It was a flimflam, a computerized con game using people's ignorance of the computer to false advantage."

According to an article in the *Lansing* (Mich.) *State Journal* the United Presidential Life Insurance Co. employed "computer techniques to convince prospects that it would be to their benefit to replace their existing insurance policy."

But what actually happened, said David Feintuch, executive assistant to the insurance commissioner, was that the agent, acting more or less on his own, would "take existing policies and feed the cash value and the age of the policy and the age of the policyholder and other relevant information into a computer. The thing would then fire back tables of all types . . ."

Feintuch said the computer "would take all these things, put them together and do summary paragraphs" and "he would then feed in the proposed insurance and do the same thing and it would come up with 20 different tables from which the uninitiated would have to pull out the information he wanted."

At this stage the agent would then "explain" the computerized data in such a way that it looked like the computer actually recommended the policy.

Under Michigan law it is necessary for an agent to fully explain a policy.

In addition, the agent was using unlicensed subagents to write new policies using the same technique – also a violation of Michigan law.

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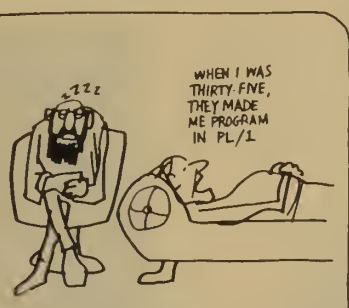

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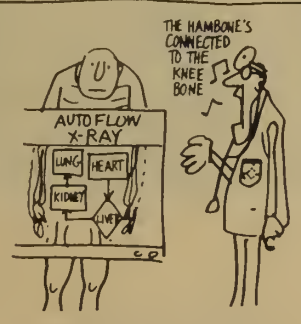

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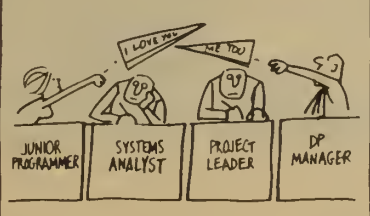

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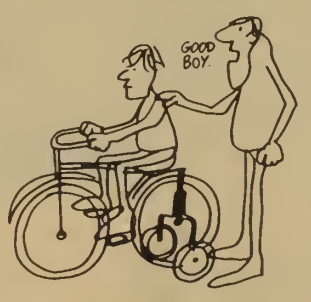

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Computers and the DP Employee — Part I

Office Jobs in UK Being Eliminated, Not Created

By Joseph Hanlon
Special to Computerworld

LONDON – Computers are wiping out office jobs in the UK at a greater rate than they are creating them.

Since computers were first introduced into the UK, they have eliminated 330,000 office jobs, and will eliminate 340,000 more in the next six years. Already computers do 3% of all office work and by 1979 they will do 6.5%.

These conclusions from the study on "Computers in Offices" by the UK Department of Employment are based on questionnaires returned by 86% of all office computer installations valued at over $50,000, plus interviews with users, service bureaus and manufacturers.

For the purposes of this study, office work was defined as "the work of administering private or public business." This includes payroll, accounting, billing and record-keeping applications, as well as airline reservation, stockbroking and banking systems.

Despite the large number of jobs eliminated, computers had put only 1,400 office workers out of work by January 1969, according to the survey. This is because the long time it takes to install a computer system (three years and three months on average) allows much time for the individual to plan and take advantage of the job situation itself, the report noted.

> The data for this three-part series comes from a little-noticed report, "Computers in Offices," issued last December by the UK Department of Employment.
>
> The first part of the series attempts to give a complete picture of the impact of computers on employment.

In particular, the report made three points: the turnover of women in boring jobs is so high that much staff attrition takes place naturally; people move into newly created DP jobs; and office jobs in general increase so much faster than computers can gobble them up that new jobs are often open within the same company.

To determine the number of jobs ended by computers, three factors must be balanced: the amount of office work (increasing steadily), new DP jobs created (increasing only slowly) and the amount of office work taken over by computers (increasing rapidly). Counting only traditional office work and ignoring new work that can be done only because of computers, the amount of office work (and thus the number of possible office jobs) is increasing 2.4% per year.

Computers, however, have "hit their stride" and are taking over increasing amounts of office work – in January 1969 only 1.2% of office work was done by computer, compared to 3% now and an expected 6.5% by January 1979. EDP staff, including data-entry people, is increasing only at a steady 17,000 per year.

In 1972, for example, the number of office jobs would have increased by 125,000 if there were no computers. Of these jobs, 60,000 were actually taken by computers while approximately 17,000 EDP individuals were added. Thus, the new jobs created for an expanding population were only 82,000 and 43,000 were lost.

Since computers were first introduced into the UK, according to the Department of Employment, they have eliminated 330,000 office jobs, adding a DP workforce of 170,000, for a net loss of 160,000 office jobs – equal to 21% of the present UK unemployment! By January 1979 computers will have destroyed 340,000 more jobs and the DP staff will total only 270,000, for a net loss of 400,000 jobs, according to the DE.

The report showed that EDP has not been of much help to women: only 1% of DP managers and 4.5% of analysts are female. On a lower level, 21% of programmers, 30% of operators and 98% of data-preparation staff are women.

"At the average well-established EDP installation in January 1969, the number of office posts taken over was 106, of which 100 were clerical, typing and office-machine operating jobs normally largely done by female staff, and the balance was of a supervisory, executive or management nature normally held mostly by males," the report noted.

"Computers in Offices" is UK Department of Employment Manpower Study No. 12. It is available for $2 from Pendragon House Inc., 899 Broadway Ave., Redwood City, Calif. 94063.

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Editorial

On Buying a Computer

The acquisition, and even the consideration, of a new computer system can be a traumatic experience for the user.

The vendors eager to install their equipment often become enmeshed in highly competitive situations in which the technical capabilities of the CPUs seem to take a back seat.

For the user objectively attempting to evaluate the merits of proposed systems, external pressures to influence his decision usually only complicate his considerations.

It is very difficult to determine at what point a salesman stops doing his job and his actions become unfair trade practices.

But the message for the user is clear. Be well prepared when considering competitive vendors' proposals. And above all, know exactly what your equipment goals are.

'Let's Start Attacking the Issue Over Here, Okay?'

Letters to the Editor

Vocational School Seeks Aid In Getting Languages Working

We presently have available to us three RCA 501 computer systems. After many hours of attempted usage, we are unable to get the Cobol or Assembler languages working properly.

We are asking for help in obtaining operations manuals and/or someone to call for advice or assistance. Do not recommend Univac as we have exhausted ourselves trying to communicate with them. We would greatly appreciate any aid or assistance received.

Allan M. Chermak
Area Vocational Tech. Institute
1601 9th Avenue North
St. Cloud, Minn. 56301

In the World of 'Hard Sell' Disappointment Is Expected

IBM certainly does not need the mere defense I might provide and certainly it has more than enough voices in its corner to defend its monopolistic position.

However, the front-page article in the Dec. 6 issue dealing with IBM marketing forces would probably lead many to defend that manufacturer.

The documented coercion effected by one sales team was obviously not subscribed to by IBM management. I am sure that any individual involved in sales, whether it be for a large company such as IBM or the smallest company, is disappointed when confronted with the prospects of losing a customer to a competitor's efforts.

Frankly, I see no dishonesty or impetuousness on the part of a salesman who suggests further study as an alternative to losing a sale to his competition.

This ill does not seem nearly as grave as that committed by the implication that all of IBM operates in this manner and the manner is wrong.

Norman C. Heinle Jr.
President

Datamatics
Englewood Cliffs, N.J.

Program Reliability Of 100% Does Not Exist

In Don Leavitt's report on the software reliability session of the FJCC [CW, Dec. 13] some users are said to object to the use of probability concepts in defining software reliability and one user is said to make the analogy of probability as used in weather reports.

Due to the fallibility of programmers and the infeasibility of testing all paths and input combinations of non-trivial programs, there will always exist an element of uncertainty regarding the capability of a program to perform error-free when put into operation.

Even if it were possible to exercise all paths during testing, there may be a combination of inputs – not anticipated during program design – which will cause an error under operating conditions.

In other words, there is no such thing as a program which is 100% reliable. Just as the Weather Service cannot guarantee sunshine in Monterey at 2 p.m. next Sunday, we cannot honestly *guarantee* a user that his program will run error-free for two hours.

However, as in the case of weather prediction, we can *estimate* the probability of occurrence of certain events. Based on test results, we can estimate the probability of a program's functioning without error for various operating times.

There are various ways to define and measure software reliability: probability of no error for a specified operating time; number of errors per operating time interval; time between errors, etc. Whatever the measure employed, probability will always be involved.

Thus, both the producer and consumer of software products will incur risks of non-error-free software operation. The major objectives of a software reliability program are:

- Estimate these risks
- Determine whether the risks are acceptable in relation to the importance of the software to mission success
- Determine whether risk reduction can be obtained at a reasonable cost.

Norman F. Schneidewind
Professor of Information Systems
Naval Postgraduate School
Monterey, Calif.

Library System Costs Cover All Mainframe Costs

The report on the FJCC seminar on computers in information data centers [CW, Dec. 13] was both comprehensive and well-grounded in the practical realities of library automation.

In relating the specific economics of the Bucknell Library On-line Circulation System (Blocs) which my paper presented, however, costs of development and operation were stated at $68,000 (total) and $8,000 (per year) respectively, *exclusive* of mainframe charges.

Our system is extremely inexpensive precisely because those two respective figures are *inclusive* of *all* development, and all operational Sigma 7 costs.

Michael J. Smith
Manager
Library Information Systems Project
Bucknell University
Lewisburg, Pa.

Fletcher Jones Remembered

I am in complete agreement with Dale McCallon [Letters to the Editor, CW, Jan. 3] in reference to the passing of Fletcher Jones, cofounder of Computer Sciences Corp.

I personally think the industry would like to see a more detailed story on Jones and some of the many contributions he made to data processing.

Ronald G. Shepherd

Arlington, Va.

A well-written tribute to Fletcher Jones appears in the December 1972 issue of CSC News, the newsletter of Computer Sciences Corp, Los Angeles, Calif. Ed.

Who Needs Certification?

ACM has taken initial steps toward joining DPMA and others in sponsoring the professional certification program. Its leaders seem to feel this is necessary if ACM is going to become a real professional association, like doctors and lawyers.

The trouble is that computer professionals are not like doctors and lawyers and others in a very key way: we do not deal directly with the public.

The average citizen rarely hires a computer programmer. Most of the people who do employ us are paid to know what they are doing.

This leads to a more serious problem.

An employer interviewing a brilliant young computer professional is not about to risk annoying him by asking whether he is certified. That is, the best people in this business are not going to have any trouble getting jobs, and they will have no real incentive to apply for certification.

Inevitably, the best people in the profession will tend not to have certificates. The mediocre people will have stacks of them. It should take everyone else only a little while to realize that a CDP might not be the best thing to mention in a resume.

I wish ACM would worry more about serving its members and less about regulating them.

Joseph T. Rigo
Ombudsman

New York City ACM
New York, N.Y.

The Ombudsman's Job

In a recent article [CW, Dec. 27/Jan. 3], Alan Taylor attacked Gordon Smith and the ACM Ombudsman Program. I was surprised, as I felt Taylor would have welcomed this attempt at membership responsibility by one of the data processing organizations.

In his article, Taylor assumes that Smith was referring to a computer operator when he blamed the "person running the computer" for the computer errors.

Smith was simply differentiating between errors made by computers and errors made by people. On the contrary, the program seeks to correct these people errors at their source, which is most often management.

One such approach now being studied would educate top management so that it might recognize poor programs and procedures created by those persons Taylor says the program seeks to protect.

R. Peter Ericson

Hartford, Conn.

Constructive Criticism Needed

Alan Taylor's attack on the ACM Ombudsman Program must have been written during a temporary anatomical displacement of his thinking ability. Such a vindictive deviation from professional stature is not what I would have expected from him.

To take Gordon Smith's quote and transform it into a direct attack on computer operators is quite unfair. The people who are really "running" the computer and responsible for it are upper management who okay or ignore the setting of policies inherent in operational systems (the whole mess, not just the computer portion).

The difficulty is that too many people unfamiliar with organizational mechanics and computers are put off by the defense, "the computer did it and we cannot fix it." The ACM Ombudsman, who is a volunteer, attempts to determine what the real cause of an error was and so inform the person requiring assistance.

I agree that ACM could do much more to assist the public. So could DPMA, Society of CDPs and Acpa.

In my five years of active ACM participation I never encountered any pressure, subtle or otherwise, from any of the ACM institutional members.

Jon A. Meads
Chairman – Siggraph

ACM
New York, N.Y.

Users Not Blameless

Problems of Computer Buying Take Some Tracing

The Taylor Report
By
Alan Taylor, CDP

Recently, a Virginia bank that was expecting a sorter it had paid for on the second-hand market was disappointed. The sorter did not arrive on the date expected, the money was taken out of the dealer's account – and chaos reigned.

There was no doubt about the location of the sorter. It was sitting in a Hudson Valley, N.Y., bank, doing the day-to-day work. Nor was there any doubt as to the contract of the buying bank.

What was, however, in doubt was the responsibility – ethical, legal or operational – of the selling bank to honor the expectations of the buyer.

This doubt arose because there were two intermediaries involved – used computer dealers. One represented the selling bank – but the buying bank did not know about him. One was working on a contingency, and had found a client for the selling dealer. The selling bank knew about him to some extent, but took no responsibility for any of his contracts.

Even when all four parties were together, during the inspection operations, this situation did not become clear. The inspecting officers of the buying bank did not realize that the "friend" their dealer had along was in fact a principal party. No one disabused them of the notion that their dealer represented the selling bank.

And the selling bank would not release the equipment because the new sorter they were expecting had not yet been delivered.

How often does this situation happen? Not too often is it as complex as this case, but it certainly can happen quite frequently.

One marketing man "showed me his inventory" of available equipment stretching over the next year. It was displayed upon the status board in one of his offices near the O'Hare Airport in Chicago.

Much of the equipment on the display board was still in use in customers' hands. It was scheduled for delivery at some time and some contractual arrangement together with a deposit of a comparatively small percentage (5% to 15%) had been made.

Some of it, particularly some of the more common peripherals, was available in warehouses – often the same as those used across the country by IBM to stock its spare equipment.

He had contracts but he did not have title to the equipment.

Title Delays

This is a key problem. Title for equipment does not pass merely because a contingency contract has been made between some equipment owner and a dealer. Most of the equipment offered by dealers is not really totally theirs; they may have an option on it.

Moreover, because of the problems of finding customers, when these options are obtained, the dealer often passes off the equipment to other dealers as being "available."

There is generally enough room for two commissions. Many dealers count on this. When equipment comes onto the market, dealers who have a contact may well offer it to anyone they feel is likely to buy – even though they themselves have not got physical or legal possession of it.

The dealers have started an association so they can meet some of the people who are offering such equipment right across the table. They feel this might help stop the practice. Perhaps it will – I really don't know.

However, I think something further should be done. Talking across the table certainly may help solve the problem within a group of dealers, but my interest is with users – not dealers. It does little toward solving the users' problems.

The normal user only deals with dealers once every few years. But users are reasonably interested in purchasing used computer equipment, because there are extremely good values around.

Where a system is operational on a Model 30, for example, and is performing all the needed work within the available time, then there is little incentive to upgrade to larger equipment.

But there is incentive to reduce the costs. Where computer equipment is available on the open market at around half the original cost (as is the case with many five or six year old 360 computers today) the cost effectiveness of such equipment is often much better than the cost of new 370 equipment.

Good for Seller, Too

There are equally good reasons for wanting to dispose of equipment. When new systems are introduced and new equipment comes in, users make much of the equipment that had previously been purchased on the open market.

Often its book value has been written down with conservative banking practices. This makes the sale of the equipment, although useful, not particularly important.

Already the book value is approaching zero, and the selling firm regards any income it receives as being a type of windfall profit.

They therefore do not really worry too much about the selling operation either.

To the seller the delay of a month or two in getting rid of the equipment is comparatively unimportant.

Further they find themselves in a quandary as to when to sell. IBM may have said delivery of some equipment will take place in November – but the salesman said he will try to "have it moved up" and they should be ready to receive the equipment at the beginning of October.

Sometimes the salesman succeeds and the delivery is moved up. Sometimes he doesn't and it isn't. Sometimes – and worse – even though it is originally promised for delivery at one point it actually arrives considerably late.

Contracts Key Problem

The key problem for the selling organization is that it does not have a firm contract from the new equipment supplier. (Or rather the contract, although firm, has been written by the equipment supplier in such a way that it protects the supplier and doesn't protect the user at all.)

True, contracts usually permit the user to cancel the contract for a failure in delivery. I'd like to see what happens to the DP manager who cancels out a contract for a sorter because it's a week late, or permits the advanced sale of another sorter to be legally consummated and has the sorter physically taken out of his possession!

He wouldn't last long in his bank, and I doubt whether anyone would later give him a recommendation for new employment at such a level.

As long as this current situation continues, whereby delivery dates from new equipment manufacturers are effectively discretionary, while delivery dates of used equipment can be fairly firm, it seems unlikely the current title problem can be properly cleared up.

How can the seller of used equipment risk his operations by giving title to a buyer?

And how can a dealer do more than take contingency deals when his prime clients are unable to negotiate clean terms with any customers he finds for them? I don't think that the majority of the dealers are unwilling to operate in a tight manner, and I think they are responding to the situation as effectively as is practical.

Who then is to blame? And who can do something about the situation to help the user?

There is no question as to where the original blame lies. The use of loose contracts that made some sense in 1950 when computers were not safely manufacturable at a time when the industry of the country relies upon computers is pure nonsense.

The terms currently offered by computer manufacturers are an insult to the users, an insult which the users currently swallow. There is no reason why delivery dates are not made firm, or why, upon failure of delivery the supplier does not provide adequate replacement computers at his own expense.

We're not in Model T days but to read contract terms you would think otherwise.

Perhaps the manufacturers are only the original culprits; the users themselves, by their inactions, continue to perpetuate the problem.

The failure of the user organizations to act for the users – as opposed to being loyal customers of a particular vendor – is the reason why the manufacturers can get away with poor contracts.

Currently the manufacturers can effectively veto any user group's demand for better contract terms.

They can pressure user groups and their members by providing subsidies for "house-trained" user groups; providing advanced information and advanced deliveries; threatening or actually proceeding to politically attack professionals who go against the manufacturer line as in the case of Arthur Hill of Delaware [CW, Dec. 6]. Under such circumstances any well organized value-analysis by the manufacturers will quite properly show that the most profitable thing is to continue to provide poor contract terms and support a controlled user group! (Indeed, if they ever need to strengthen such control, they only have to continue to provide the poor software which makes such user groups an essential part of user life. If all the software provided were reliable then user groups would soon find their independence!)

What can be done? At the moment we can only gather ideas.

The dealers – with all the problems – are making profits and providing good value and could perhaps act as a focal point. They could provide some of the financial support necessary for an appropriate investigation as to what users can do to improve the situation.

However this may not be practical. The dealers themselves are also open to pressure from the large manufacturing organizations.

Public acknowledgement of improper political pressures on data processing professionals certainly are a help. But the usual policy of hiding things under the rug is of no professional help.

At the moment I see only one way to attack the situation.

When buying or selling through a dealer users should not merely visit the equipment installation site, but insist on visiting and talking with the principals (the current owners). Talk to the dealers working for both parties and any intermediary ones before setting a system in progress.

Any ideas readers have would be gratefully received and carefully considered.

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THE AUTHORS

Roger MacGowan is professor of Computer Science with the Dept. of Defense Computer Institute in Washington, D.C. and is a frequent contributor to professional journals.

Reid Henderson is President of Compudemics, Inc., and is both a CPA and CDP. He also lectures at George Washington University and the Industrial College of the Armed Forces.

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Let's First Solve Our Social Problems On Person-to-Person, Not Group Basis

By Richard L. Fyfe
Special to Computerworld

In response to the article in the Dec. 13 issue titled "DPers Fail Social Role," I would like to offer the following comments:

● There are very few modern professions that are open to and have incorporated into their ranks so many men and women of different ethnic and color groups. Joseph Rigo, representing the "rock hide bound" banking industry, should be one of the last to speak about social inequity.

● Since when is it the responsibility of a particular profession to take upon itself social challenge? If we were sociologists, lawyers or politicians, perhaps the article's statements would be justified, but because we are responsible for handling and analyzing data, does this justify the responsibility for the cause of the data?

● That we may offer an idea or, as Rigo indicated, stir up interest in social concerns is a tribute rather than a condemnation. We all have opportunities in the data processing profession and in every other profession to help our fellow man or woman as the case may be without being champion for a cause.

● Again Rigo states: "We look for some way to help change the world to make life better for other people without lousing up our own lives in the process."

Well, I ask how in the name of sanity can a person with a loused-up life possibly help anyone else? Or how does one loused-up

Viewpoint

life – which by the way is never singular – possibly balance anything?

● If people that he (Joseph Rigo) knows fade from the scene when the hard work begins, then perhaps his circle of acquaintances needs more integrity. I do agree there are people who like to stir things up and then having achieved their purpose drop from the scene, but this is not characteristic of the data processing society.

● I believe again that Rigo's statement that the computer professionals are not experts in the areas of concern of these social organizations is not substantiated nor is it realistic.

A computer professional is not an expert in all fields. A bank teller handles money all day long, but does that make him a financial expert?

● Finally, I agree with Rigo. It is time for our community and social organizations to pool our professional skills and solve problems, but let them be our own local problems in our own communities and our own companies and let us not be like the social opportunists who are always interested in developing "so-called" low-cost housing projects in someone else's town while neglecting the problems of their own town.

Let us solve social problems on a day-to-day, person-to-person basis by the strength of our own personal convictions and not try to pass off responsibility to the group or the town or the company. When social decision time comes, let's make it on an evaluation which is not biased by external responsibility, but by personal responsibility.

● My final thought is that whether we are computer professionals, nonprofessionals or members of any other trade or profession, if each head of each family could show enough concern to be responsible for his own family then we would have very few social concerns to process data about.

Richard L. Fyfe does MIS consulting for AMF, Inc., White Plains, N.Y.

DOS/VS Can Benefit DOS Batch User

By Bennett I. Moyle
Special to Computerworld

Over the past few months, various industry observers have commented on the potential value (or lack thereof) in DOS/VS for batch processing. The point often made is that the DOS user in a "real-memory" environment who is forced to fit his programs into predetermined partition sizes will know when he must acquire more memory, but (it is implied) the VS user will be less ambitious about limiting his programs to predetermined sizes, and will realize that he must acquire more memory only when performance degradation from heavy paging occurs due to too many, too large programs.

Although a DOS installation today may struggle to fit many of its programs into fixed-partition sizes, there are inevitably many programs at the installation which are considerably smaller than the partition sizes.

In a multiple-partition operation, the effective loss of memory is also multiplied. Consequently, the "real-memory" user who finds himself "needing" more memory because many of his programs will no longer fit, may really only be using a small percentage of his memory capability.

Viewpoint

A DOS/VS installation, on the other hand, can use the memory left over by small programs for large programs running concurrently in other partitions.

Consequently, when the "real memory" appears to have "run out" in a DOS/VS installation, as indicated by heavy paging, a higher percentage of the real memory will have been utilized than in the DOS environment.

Universal Access

At initial installation, then, a DOS/VS batch system should make significantly better use of real memory than its immediate DOS predecessor, not so much because it can use external storage for programs larger than real memory, but because all programs have access to memory independent of partition sizes or fixed-address boundaries.

If the DOS/VS installation runs into degraded processing in the future due to addition of many large programs, that may not be as unhealthy as it sounds. Those large programs, if attempted on the predecessor DOS, would have to be redesigned into several programs of smaller size requiring passage of data files between them, or else would have been written in overlay structures.

Both of these techniques would probably extend the run time of their application considerably, which is one way of defining "degradation."

These considerations suggest to me that the DOS batch user can benefit significantly from DOS/VS.

Bennett I. Moyle is a systems programmer with the Federal Reserve Bank of Minneapolis.

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City Asks Help With Popular S/3 Programs

By Don Leavitt
Of the CW Staff

VENTURA, Calif. – Like many municipalities, this city has been willing to share its DP experiences and programs with others. Lately, however, a new wave of interest in Ventura's programs has provoked a rethinking in how the city can and should respond.

Cooperation has usually been on a rather casual basis with surrounding cities and towns, and reciprocity was expected and received as a matter of course, Ventura's general services manager Fred Patrick explained.

Growing Interest

During 1972, the city shifted from a Honeywell CPU to an IBM System 3/10. More or less concurrent with the development of software for the new equipment, Ventura began getting requests for the programs from western localities, with no apparent means of reciprocating.

Applications already installed at Ventura include budget and inventory control, payroll for city employees and a fundamental licensing system. All of these are written in RPG II, are being sharply enhanced and would provide most municipalities with a good DP base, Patrick said.

Both Patrick and city attorney Bruce Leavitt saw two possible meanings to the wide-ranging interest in Ventura's software. First, it would cost the city money to fulfill the requests and, second, IBM was apparently spreading the word about the software as a means of selling S/3s to other cities.

Ambivalent Feelings

Ventura didn't want to lose money but neither did it want to provide vendors a means of making money from the city's work. Leavitt has been exploring how to protect Ventura's and the users' interests so that neither IBM nor any other vendor could acquire copies of the software and start peddling it for a fee.

Since they felt IBM stood to benefit by a wider distribution of the programs, Leavitt and Patrick approached IBM's local branch manager, Bill Avery, to see whether the company would be willing to improve the available documentation, and pay for its distribution.

Ventura would, under this plan, underwrite the cost of reproduction of the program decks themselves.

IBM has not yet decided how to answer this request, Avery said recently. He denied company salesmen would use the possible availability of the programs as a means of selling S/3s.

To the best of his knowledge, Avery added, IBM had never previously been asked to underwrite this type of project. He denied any plans to distribute the software as Installed User Programs (under which IBM would charge a fee).

Random Notes

'Grasp' Gains 370 Sensing, AVR, Class Queue Managers

BURLINGAME, Calif. – Version 2 Level 4 of Grasp II, now available from Software Design Inc., allows DOS users Automatic Volume Recognition (AVR), class queue management (CQM) techniques and the ability to recognize if the package is being run on 360 or 370 equipment.

AVR, long a standard feature of IBM's OS, searches all the peripherals for desired volumes and warns the operator when a needed data set is unavailable. CQM allows DOS users to share system resources according to a priority scheme. If the 370 test is positive, this version of Grasp II will use 370 instructions, an SDI spokesman said from 880 Mitten Road, 94010.

Repro-Modeling Cuts CPU Times

SANTA MONICA, Calif. – Repro-modeling, a new technique developed by Technology Service Corp., has, in some applications, reduced computer time to run a model by factors of from 100 to 10,000, a company spokesman said recently.

The technique is used with complex models in which the number of parameters, the difficulty in defining the model or interpreting the implications of its execution, or the time needed are major factors. The technique "collapses" or approximates the model by determining which factors will significantly affect the output. TSC is at 225 Santa Monica Blvd., 90401.

Infonational Adds Service Office

FT. WORTH, Texas – Infonational Inc., a San Diego, Calif.-based software and service company, has opened a new computer center for users in the Dallas /Ft. Worth area. The center is at 6421 Camp Bowie Blvd., 76116, and is organized around a 360/40.

Edos Spooler Jumps Throughput 300%

RICHMOND, Va. – Throughput for DOS/360 users may improve as much as 300%, at a cost of only 2K of core, with the Extended Spooling Facility (ESF) software from The Computer Company.

That degree of improvement has been noted, the company explained, when comparing ESF-based operations to unspooled I/O operations with a "typical job mix." Shifting from other spooling packages to ESF also improves throughput, but the results are not as dramatic or clearcut as compared to completely unspooled systems, a spokesman said.

Spooling is the technique of moving data from card readers to disk, or from main memory to disk before going to printer or punch, in order to separate high-speed CPU processing from the drag of low-speed I/O gear.

ESF differs from other currently available spoolers in its use of dynamic buffering within main memory, its approaches to command chaining which reduces the instructional overhead and its management of the space it uses out on the disk, the spokesman claimed.

ESF is a special, optional feature that works in conjunction with The Computer Company's Extended DOS (Edos) enhancement package for the 360. As originally released [CW, April 12], Edos had no spooler of its own but was – and still is – compatible with any of the spoolers that operate under IBM's DOS Release 26.

Unlike the other packages, ESF is integrated into the DOS/Edos supervisor which, the company said, eliminates the need for pass-backs to DOS when a spooling operation is done. Meanwhile, the operator picks up time by being able to communicate with the system directly from the device he is currently tending.

This is an extension of the "hot reader" approach, now part of IBM's Power II spooler, but under ESF it includes support for line printers and card punches.

Data records going out to the disk are noted on special directory cylinders, and the records themselves are moved to a general data "pool" on the disk.

Records are blocked dynamically to take advantage of buffer space available in core as data is moved from disk to the final output device.

Records on the disk are compressed through the elimination of all blanks. This saves space but also saves excessive movement of the disk-access arm, thus improving the execution time, the company said.

Everything in Its Place

The system creates separate "generic queues" for the type of output device to be served. Thus one printer can handle the work of several, still within a priority "first-in/first-out" mechanism, and output gets produced in the sequence it is wanted, the spokesman noted.

Installation of ESF, linked as it is to Edos, means that all the features of the main enhancement package – relocatable loader, load balancing, resident transients and even 6-partition support – can be used along with the spooling itself

ESF is a separately priced feature, available for $200/mo in addition to the $225/mo charged for the basic Edos package.

The Computer Company is at the 7th and Franklin Bldg., 23219.

'Samson' Reports CICS Activity Over User-Defined Time Periods

NEW YORK – Users of IBM's Customer Information Control System (CICS) can gain a series of "snapshots" of what the system is doing (or not doing) without seriously interrupting the operation, by using the System Activity Monitor (Samson) module from On-Line Software Inc.

Samson displays the number of tasks in the system, and lists both the active and suspended tasks. In addition to showing the dispatchability status and priority of each task, Samson also shows the reason for suspension of each task that has not been dispatched.

Functionally, Samson operates as a CICS transaction, and can be activated from the control terminal or any other unit linked to the CICS net. The user simply specifies the time interval between displays and the number of cycles to be generated before that use of Samson is terminated.

The Samson response would normally be displayed on a CRT terminal long enough for the analyst/user to spot any significant pattern, particularly if he is aware of a problem that may be tied back to a particular task.

If activated by an entry from a terminal with hard-copy facilities, the Samson responses could be made available for more thorough analysis later without losing the dynamic capture of the ongoing activity, an On-Line spokesman noted.

In any case, the ongoing reports, which may reflect monitoring at one-second intervals, are said to provide the user with more useful information than is available either through core dumps in case of system problems or standard end-of-day statistics from CICS, he added.

The Samson module operates under either DOS or OS, takes only 1,300 bytes of storage and costs $500.

On-Line Software is at 2 W. 45th St., 10036.

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'Infonet' Adds RJE Service on 360/195 To Ease Transfers From In-House CPUs

LOS ANGELES – Users with in-house 360 systems strained by general overload or by individual jobs too large for the equipment can shift some of their work to a 360/195 recently made available to subscribers of the Computer Science Corp. (CSC) Infonet remote-computing network, under an agreement between CSC and United Air Lines.

Normal Infonet service is based on Univac 1108 mainframes. Because of the availability of common languages, these can handle many jobs originally written for 360 users, but some conversions are required, particularly with file organizations.

The 195 support has been acquired from United, CSC said, primarily to avoid those conversion chores for OS/360 users.

Infonet 195 will be parallel to, but less ambitious than the 1108 service, which allows users to shift jobs – including both program development work and application processing – from interactive to batch mode, and back again, as a user option.

The ability to change from mode to mode "on the fly" is unique to Infonet, CSC spokesmen claimed, but is not part of the 195 operation. The new offering is strictly for remote batch work and has no interactive capability.

The Infonet 195 features 2,097K bytes of core storage, with "virtually unlimited" disk storage. Access may be over 2,000 bit/sec dial-up lines or dedicated lines at any speed, using IBM 2780/3780, IBM 1130, System 3, 360/20, or any terminal capable of emulating these systems.

The 195 operates under OS/MVT release 20.7 with access to Hasp II/RJE. Users also have access to Bdam and Isam file access methods. The service supports Assembler F, ANS Cobol, Fortran G and H, and PL/I F, as well as RPG, loaders and utilities, CSC said.

Initial applications available under Infonet 195 are geared to users in the oil and gas, nuclear and general construction industries, but the system can be used for almost any batch processing job.

Service on the 195 is available to Infonet users nationally, seven days a week, from 8 a.m. to 11 p.m. in the east, to 5 a.m. to 8 p.m. in the Pacific time zone. Normal high-speed dial-up communications service is provided by Infonet at no cost to the user.

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DDA Package Faster, Smaller Than IBM's

ORLANDO, Fla. – A Demand Deposit Accounting (DDA) package from Florida Software Services (FSS) is compact enough to manage multiple banks or multiple branches in 24K to 30K bytes of storage. It does the work faster than IBM's DDA package, according to FSS, even though the new offering is written in Cobol, while IBM's is written in BAL.

Cobol allows the user to modify the system coding easily and the use of bank control cards permit the creation of processing streams that use different combinations of existing modules to meet individual bank or branch requirements.

The FSS package requires only one such control card per bank or branch but the card provides for the definition of more than 20 processing characteristics. These include the choice of check digit calculations, overdraft handling and service charge computation and report formats, an FSS source noted.

User-Coded Routines

The package, as distributed, includes various modules for each of these operations but also enables the user to code his own routines. The new procedures can be accessed through appropriate entries in the bank control cards.

One routine FSS includes in its package provides automatic loans to cover overdrafts. In this instance, the bank control card entries would show how to identify those customers eligible for this type of support and the dollar limit to which they can be carried.

The system utilizes a series of files for easy access of specific data. Both the balances and name/address files are Indexed Sequential (Isam) with an eye to day-to-day processing. The Stops/Holds and Transaction files are unlimited in size.

The FSS system is simple to install and is mailed to users along with documentation and test data. It has been field-tested and is currently installed at 17 sites, the company said. The system costs $7,500.

FSS can be reached trhough P.O. Box 2269, 32802.

Accounting Service 'Mailed'

PHILADELPHIA – An accounting and inventory control system with features particularly useful to firms in the mail order or publishing business is available to users in the middle-Atlantic states on the Data-Tek computer utility network.

Geared to users that need to process 500 to 5,000 invoice/mo, and maintain inventory levels on 100 to 5,000 items, the system also provides direct mail addressing operations.

Data-Tek is at 3401 Market St., 19104, with branches in New York City and Harrisburg, Pa.

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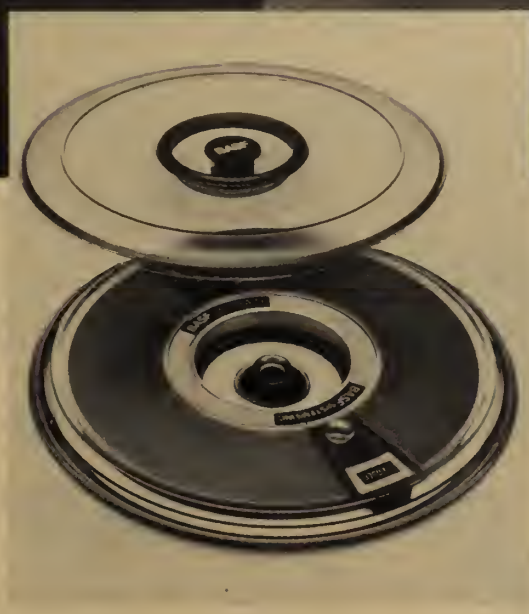

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DATABUS, A HI-LEVEL LANGUAGE — Databus, the Cobol-like Datapoint Business Language, was written especially for the Datapoint. The language contains comprehensive character and arithmetic capabilities. While programs may be written quickly in English-language statements, its real power lies in its ease of I/O operation. Tapes, disc, and printers are handled in Databus as well as communications peripherals.

SCRIBE, A TEXT PROCESSING LANGUAGE — The combination of a Datapoint 2200 plus an upper and lower case printer can form the heart of a text-processing system. The SCRIBE program, actually a high-level language, allows text to be entered via the 2200's keyboard, visually edited and stored on a cassette tape. Upon command, this stored text may then be printed on a Selectric typewriter or on any Datapoint printer.

ASSEMBLY LANGUAGE PROGRAM GENERATION — Machine Language Programs are quickly constructed by use of the Editor, Assembler, and a selection of Debuggers.

TERMINAL EMULATORS — Datapoints can simulate many well-known terminals and offer a multi-purpose alternative to a user. A variety of Terminal Emulator programs are available with many of the packages offering more flexibility than the original, yet maintaining the required discipline. Recent terminal packages include an IBM 2780, CDC 200 User Terminal, UNIVAC DCT-2000 and UNITERM, a flexible teletype-format emulator.

UTILITIES — Many sub-routines and other useful software items are available for the applications programmer. I/O drivers, communications, fixed and floating point arithmetic and a variety of other routines are available as well as a complete set of diagnostics.

This proven-in-use software capability is a big reason for the success of the Datapoint 2200 as a versatile computer or data terminal system in more than 1000 installations. Prices for the Datapoint 2200 begin at $6040 with a variety of lease and purchase plans, with worldwide maintenance available.

For more information, contact your local representative or the home office of DATAPOINT CORPORATION. That's right — we've changed our name from Computer Terminal Corporation to reflect more adequately our growing involvement in a wide range of data processing systems, services and software. DATAPOINT CORPORATION, 9725 Datapoint Drive, San Antonio, Texas 78284 (512) 696-4520.

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COMMUNICATIONS

Data Briefs

Timeplex Channel Card Has Bell-Type Modem

NORWOOD, N.J. – Timeplex has a multiplexer channel card for use in its Timeplexer units that performs the functions of an asynchronous channel and also contains a complete Bell-equivalent 103- or 202-type data set.

Called the T-ACM, the card is said to eliminate the need for modem power supplies, cables and EIA interface circuits when using a multiplexer.

The T-ACM card can be coupled to either dial-up or private lines using appropriate connecting arrangements. A series of cards matching the functions of about six Bell modem types will be available in February. Prices start at $300/card from Box 202, 65 Oak St., 07648.

CRTs Interface With RCA

PHOENIX – Courier Terminal Systems Inc.'s Executerm CRT terminals are now available for users of Univac Series 70/45, 55, 60 and newer 2 and 6 computer systems.

A line program which can be assembled with standard RCA Communications Oriented System (COS) or Multichannel Communication System (MCS) compatible software enables the Courier terminals to replace RCA 752, 8750 or 8752 video-data terminals.

The software interface leases for between $9/mo and $12/mo.

Courier is at 2202 E. University Drive, 85034.

S/4 Connects to 360/370s

WELLESLEY HILLS, Mass. – Keane Associates Inc. has added a binary synchronous communications capability to its System/4 desk-top computer.

The feature allows the S/4 to transmit data to and from 360/370 CPUs at 2K bit/sec with records up to 128 bytes on transmit and up to 133 bytes on receive.

The communications capability is available on installed systems or initially delivered units within 30 days, the company said. The feature costs $2,150 or $52.50/mo. The firm is at 36 Washington St., 02181.

MICR Terminal Aids Banks

WHITE PLAINS, N.Y. – GTE Information Systems has a hard-copy MICR terminal for banking and financial users. Featuring a Selectric keyboard, the terminal can encode checks and other documents using special MICR ribbons.

Data can also be transmitted to another terminal and information can be received and stored on tape for later MICR encoding. Called the 5-53, the terminal includes a tape-cartridge system that can store up to 73K characters. The unit costs $225/mo or $7,215. GTE is at 4 Corporate Park Drive, 10604.

WU Sets Satellite Service for 1974

NEW YORK – Satellite services for data and other users could be available as early as July 1974 now that Western Union's plans to build a domestic system have been approved by the Federal Communications Commission.

A WU spokesman said the first launch of the Westar system is scheduled for April of next year with the second satellite shot set for June. A third satellite could be launched in October 1974.

Construction of ground stations to interact with the satellites will begin at sites near New York, Chicago, Atlanta, Dallas and Los Angeles. Additional stations may be constructed at Portland, Ore., and Honolulu.

The satellite facilities will be most meaningful for long-distance private-line users, the spokesman said. For this type of data user, the availability of satellite channels could mean "economic rate reductions" for distances greater than 1,000 miles, he said. Satellite channels will be "insensitive" to distance contrasted with present phone rates which are based on mileage.

The actual rates for the satellite channels will depend on the number of subscribers utilizing the available facilities. This "fill factor" will determine how soon the carrier can recover its investment and how much will be charged for the channels, the spokesman said.

While switched-services users such as TWX and Telex users will not normally know whether their messages are being transmitted over satellites, private-line users who operate their own nets will probably have the option of using the airborne facilities.

"We will probably not average our terrestrial rates with satellite rates. And for non-switched services we will probably identify the satellite circuits for the user," the spokesman said.

Western Union may use existing satellites such as the Intelsat vehicles and Anik I in Canada to test out its ground stations, the spokesman said.

Feed and Insurance

360/50 Controls Special Terminals

By Ronald A. Frank
Of the CW Staff

ATLANTA – Independent terminals and selected customers serviced by a 360/50 have meant considerable cost savings for Computone Systems Inc.

Computone provides special feed-formulation data based on current commodity prices to its agricultural customers. Previously, the company was using its in-house feed-formulation terminal with an IBM 1070 terminal system that included a 1053 printer. This equipment cost about $300/mo and operated at 15 char./sec, according to William Robeson, Computone president.

Speed Increased

"We built a scanner to replace part of the functions of the IBM 1070, and connected it to a Memorex 1240 terminal," Robeson said. "The Memorex units cost about $160/mo and in addition to the savings, the independent terminal operates at a faster speed of 60 char./sec."

The in-house unit together with the Memorex 1240 has now been installed at about 45 agricultural sites which use Wats lines to query the CPU in Atlanta, which is equipped with 12 incoming lines.

The 300% increase in transmission speed also produced an 80% reduction in transmission time, according to Thomas Newbill Jr., Computone vice-president. The IBM terminals had mechanical tabbing and carriage return which cut their effective speed to only 12 char./sec, Newbill said.

The Memorex 1240s need no carriage return and the tabbing is electronic, he said. The switch to the independent terminals cuts the time of an average inquiry from five minutes to one minute, Newbill said.

The time-sharing system provides an important service to feed makers and sausage makers. In making animal feed, the formulator must guarantee a nutrient analysis that specifies total protein, fat and carbohydrate and concentration of particular nutrients, such as vitamins, minerals and amino acids.

The manufacturer's problem is to meet these specifications at lowest cost. Different feed materials – such as grains, alfalfa, fish meal and chemical additives – contain different amounts of these nutrients, and the prices of these feed materials vary every day.

Computone's linear-programming techniques provide the solutions to such formulating problems. From a 1240 terminal at his own plant or mill, a nutritionist enters current prices for available materials. He receives as printed output the current least-cost formulation for the product, taking into account the product specifications and inventory constraints previously stored in the 360/50.

In sausage-making, the customer receives an optimum formulation based on the prices and composition of different cuts of meat – pork cheeks, beef trimmings, etc. – as well as binders, extenders and other ingredients. Generally, a manufacturer will check his formulation daily or weekly.

Insurance Needs

In addition to its agricultural customers, Computone provides an audio-response service to insurance companies. Using portable terminals developed by the company, insurance salesmen access the Computone data base to get data that will help estimate the insurance needs of a prospect.

The salesman, in the prospect's home, uses an acoustic coupler on the terminal to transmit the customer's requirements to the Computone data base. The answer is then received via a Wavetek audio-response system through the speaker in the portable terminal.

Before installing the Wavetek response system, Computone had an IBM 7770, Robeson said. The switch caused a savings of about $1,000/mo, he estimated.

The combination of agriculture and insurance doesn't seem strange to Robeson. Currently his company is working to provide a specialized service to real estate agents, he added.

Microdata's Dual Processors Designed for Data Networks

IRVINE, Calif. – Microdata's 1600/60 Communications Processor is designed to upgrade the firm's line of communications interfaces and software packages to assemble programmable communications systems.

Each of the 1600/60's two independent CPUs has its own I/O system and microprogram control memory.

One CPU – a general purpose computer – is dedicated to system control, control of peripheral devices and message processing. The second CPU, the COM-60, services up to 256 synchronous and/or asynchronous communications channels operating full- or half-duplex with throughput up to 40K char./sec, the firm's spokesman commented.

Typical applications for the new system might be a data concentrator, front-end preprocessor and store-and-forward message-switcher, a company spokesman said.

Price for a typical system with 64 asynchronous modem interfaces, 32K bytes of core memory and cabinets is $29,000 from 17481 Red Hill Ave., 92705.

Now...get both in one... a batch terminal and a time sharing terminal.

No longer is it necessary for the batch terminal user who has a need to access a local time sharing system to maintain a simple, low-speed terminal just for this purpose in the same office. Sycor now has eliminated this expense by adding low speed (100-300 baud) asynchronous communications capability to its Model 340.

A Sycor 340 user can access any major time sharing system, input the problem, receive the solution, and continue with the data entry operation. Captured data then can be batched to the central computer facility at 1200-4800 baud speeds using IBM-compatible BSC procedures.

In addition to this unique dual communications capability, Sycor provides users with T.A.L., a programming language developed specially for data entry applications. A wide choice of peripherals also is available—printers ranging in speed from 30 cps to 200 lpm, 7 or 9 track magnetic tape drives, and a 250 cpm card reader.

To get started getting both in one, call or write today for our colorful, informative brochure on the versatile Model 340.

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03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
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12 Communications/Printing/Publ.
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____ Washington, D.C.	Feb. 20-22 (Tues, Wed, Thur)	Sheraton-Park Hotel
____ New York	March 5-7 (Mon, Tues, Wed)	New York Hilton
____ Atlanta	March 13-15 (Tues, Wed, Thur)	Regency-Hyatt House
____ Houston	March 20-22 (Tues, Wed, Thur)	Hyatt-Regency Houston
____ Anaheim	March 27-29 (Tues, Wed, Thur)	Disneyland Hotel
____ San Francisco	April 3-5 (Tues, Wed, Thur)	Civic Auditorium (Forums & Exposition) Del Webb Towne House (Hotel Rooms)
____ Kansas City, Mo.	April 11-13 (Wed, Thur, Fri)	Municipal Auditorium (Forums & Exposition) Muehlebach (Hotel Rooms)
____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 – Data Entry – 9 am-2:30 pm
☐ Day 2 – Data Communications – 9 am-2:30 pm
☐ Day 3 – Installation Management – 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all – free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day – $25.00 ☐ Two Days – $50.00
☐ Three Days – $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
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797 Washington Street
Newton, Mass. 02160

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SPACE SAVER

FOR THE 1973 COMPUTER USERS' FORUM & EXPOSITION – The National Computer Conference that's coming to you.

If you're interested in more efficient EDP operations, then you should be reserving your space right now for The Computer Caravan/73 Users' Forums. This unique program will soon be in a city near you – with shirtsleeve workshops, panel discussions, user-oriented experts, and an exchange of information that will benefit you and your company.

Each day of the three-day show will feature a different topic. You'll be able to air your problems, and learn how others have solved theirs. You'll ask questions, give opinions – and get answers. And you'll come out of the Forum with some new ideas on making your EDP operation more efficient.

FORUM TOPICS

Day 1 – Data Entry

Including panel discussions and workshops on:
Keypunch Replacement (shared processor)
Intelligent Terminals
OCR
Direct (on-line) Data Entry

Day 2 – Communications

Four panelists will discuss two top issues:
Data Transmission
a) dial-up
b) leased lines/broadband
Equipment Selection
a) communications processors
b) control equipment (terminals, modems)

Day 3 – Installation Management

Panel discussion on management aspects and workshops on specific techniques in the following areas:
Personnel, recruiting and training
Programming management
Independent Peripherals
a) memories
b) other peripherals

The Computer Caravan/73

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Forum Attendance is limited

In order for the Forums to work, attendance is strictly limited. So don't wait too long to save your space.

OPEN SESSIONS

New for this year, we'll be conducting open sessions each afternoon for anyone who wants to attend. Each day at 2:30 a different subject will be opened up for discussion and controversy. Here's the schedule.

Day 1 – Data Communications Planning
Day 2 – Software Evaluation Panel
Day 3 – Small Systems Panel

EXPOSITION

The expanded Exhibit Floor will be open from 10 to 6 each day. A variety of leading companies will be there with their latest EDP products and services. And you'll have plenty of time to look at everything that interests you. It's an excellent opportunity to stay ahead of this fast-moving industry. And if you have to make decisions, you should be there. (Advance registration is not required for the Exposition.)

Bits & Pieces

Inking System Keeps Ink Pressure Constant

ANAHEIM, Calif. – A pressure-control inking system automatically keeps ink pressure constant as pens vary speed in Calcomp's new top-of-the-line Model 7000 programmable drafting system.

The sensing system enables the unit to produce an even line width to .0002 in., while the moving pens attain speeds up to 42 in./sec, a firm spokesman said.

List price is $81,000 and includes a controller, flatbed plotter, pressure-inking system, basic software and a one-year service warranty from 2411 W. LaPalma Ave., 92801.

Users Offered 'Naked' Reader

MELBOURNE, Fla. – An OEM approach to selling to end users is being tried by Documation Inc. with the "W" series of card readers.

For $2,420, users can buy the M300W, M600W and M1000W without the outside cabinets, for installation in the user's existing cabinetry.

Units read standard 12-row, 80-column punched cards at 300-, 600-, and 1,000-card/min, a spokesman stated.

Delivery is 60 days from P.O. Box 1240, 32901.

Spectrum Users Work With TTYs

FT. LAUDERDALE, Fla. – Users of the Spectrum Dynamics Model 550 programmer/verifier can accept coded input from teletype writer terminals.

The Model 510 can accommodate even, odd or no parity with all communication made through an external mating connector on the rear of the 550, the firm stated.

Priced at $1,500, the 510 option is available from 2300 E. Oakland Pk. Blvd., 33306.

UPS on Firm Ground

WILLOUGHBY, Ohio – Cyberex, Inc. has designed and delivered an Uninterruptible Power System to the Tennessee Valley Authority that Cyberex claims will assure reliable operation through earthquakes and other seismic disturbances.

Units supplied to the TVA are single phase, 15kVA continuous systems with diode coupling to the plant battery system.

The firm is at 4399 Industrial Park, 44094.

Raytheon to Service Wyle Users

EL SEGUNDO, Calif. – Wyle Computer Products has contracted with Raytheon Service Co. to provide nationwide service for Wyle's 8000 Series of display terminals – replacement units for IBM 2260s.

251 Has Multiprogramming

NCR Adds Step Between 200, 300 Series

By Michael Weinstein
Of the CW Staff

DAYTON, Ohio – NCR has unveiled a multiprogramming computer system to give its users an intermediate step between the Century 200 and 300.

The Century 251 will compete for new users with the IBM 370/135, Burroughs 2700 and 3700, Univac 9400 and Honeywell 2050 and 2060, the firm's spokesman said.

The 251 is the smallest NCR computer to provide on-line and multiprogramming capabilities, with a typical system renting for around $10,000/mo, the spokesman stated.

The 251 is available in four memory sizes – a basic 96K bytes, 128K bytes, 192K bytes and 256K bytes – with the single cabinet memory having a cycle time of 1.2 μsec. for each 4-byte access, the spokesman said.

The memory provides two-way interleaving so that up to 14 peripherals can operate simultaneously in a 251-based system, he continued.

Century 251 comes in four memory sizes.

What's New?

New features, previously only available in the larger Century 300, include the B-4 executive operating system and the NCR high-density disk subsystem which provides 48M bytes of information per disk pack, the spokesman said.

The B-4 operating system speeds up user operation by enabling the 251 to use only the portion of main memory and peripherals required for each processing job, he noted.

User programs can be written in high-level Cobol, full Fortran or NCR's proprietary programming language, Neat/3.

The new system will be particularly suited for users moving to multiprogramming and who foresee the need for future growth, the spokesman observed.

For example, a typical user could be a bank with the 251 acting as the hub of an information network connected to on-line teller terminals.

In such an operation, the user could further use the multiprogramming capabilities and disk access to develop a centrally accessible information file, the spokesman suggested.

NCR offers integrated software packages – such as those for inventory and production control – that could be utilized by the user to develop his own tailor-made system, he concluded.

First customer deliveries are expected in the last quarter of 1973.

Univac Disk Storage Subsystems Write Data on 406 Cylinders

PHILADELPHIA – Users of Univac computers are offered a new intermediate capacity, direct-access disk subsystem with faster access time than previous models in addition to a new version of the larger-capacity 8440 disk subsystem.

Designed for Univac 9700, 1106, 418III and 494 computer systems, the 8424 Disk Storage Subsystem consists of a control unit and from one to four 8424 disk units.

Each unit contains two independent drives with each providing up to 58M bytes, 25M 18-bit words, 16M 30-bit words or 10M 36-bit words of storage, a Univac spokesman said.

The 8424 subsystem records data at the same bit density – 2.2K bit/in. – as the Univac 8414 disk units but writes data on up to 406 cylinders – twice the number of the 8414, the spokesman asserted.

Average positioning time has been improved to 30 μsec by using an electromagnetic servocontrolled actuator. Twenty read/write heads are mounted on the actuator which moves the 20 heads in unison over the area of the disk.

The control unit interprets and executes file instructions, checks the validity of the data being transferred and furnishes status information to the processor, he said.

Other features include file scan, record overflow and dual-access operation which permits two independent access paths to a single disk drive.

Enhancements added to the 8440 disk-storage subsystem – available to users of Univac 1100 Series computers, 9700 system and Series 70/6, 70/7, 70/60, 70/61 systems – include an increase in capacity to approximately 954M bytes or 160M 36-bit words per subsystem.

The 8424 subsystem consisting of control unit and one 8424 storage unit costs $2,365/mo (including maintenance) on a one-year rental. Purchase price for the basic subsystem is $78,225.

Univac's 8424 Disk Storage System can provide up to 467M bytes or 640M characters of on-line information.

Pricing of the 8440 subsystem consisting of a control unit and one 8440 storage unit starts at $3,493/mo (including maintenance) on a one-year rental. Purchase price for this basic subsystem is $115,909.

Disk Drive Series Can Store 100M Bits

HICKSVILLE, N.Y. – Per Data has a new series of moving-head disk drives with storage capacities from 25M to 100M bits per drive.

Up to four drives can be daisy-chained for a total storage of 400M bits, the firm spokesman stated.

Specifications include 10-μsec access time – track to track, 35-μsec – random access time, write protect, 2.5 MHz data rate at 2,400 rpm and integral power supply, he added.

Cost for single units is about $3,000 from 102 New South Road, 11801.

For the MD With Everything...

CAMBRIDGE, Mass. – For the doctor with everything, CSM Medical Devices, Inc. has a computerized patient history-taking system.

The Doctorsaid system uses a PDP-8 to ask multiple-choice questions of the patient through a microfilm-display terminal.

The Doctorsaid system lists for $20,000 for the minicomputer and software system, and $8,000 for each remote terminal.

Each mini will handle up to 16 remote consoles. The rental provides a remote console and printer at a rate of $4 for each history taken, with a minimum rental fee of $500/mo. Purchase and rental are from the firm at 377 Putnam Ave., 02139.

Your Happy Hookup

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Users Offered OCR, Key-to-Disk Entry in One System

DALLAS – Users can now handle all data-entry operations – Optical Character Recognition (OCR) or key-oriented – on a single system provided and supported by a single supplier, according to the developer, Recognition Equipment Inc.

The OCR portion of the system is any model of Recognition Equipment's Input 80 character page reader. These units can be configured to read single-, multiple or multifont input as well as handprinted data, the firm's spokesman said.

On-Line With Reader

The key-to-disk feature is configured on-line with the OCR page reader to a central processor with 32K words of memory, a 7- or 9-track tape drive, a 2-1/2M-byte disk subsystem, and from one to 22 keystations, each with its own video-display terminal, he stated.

Optional system features include up to three additional 2-1/2M-byte disk drives, three additional tape drives and a communications interface, the spokesman added.

Total Data-Entry System

The capabilities of a total data-entry system allow the user to process all unreadable documents from OCR applications, the spokesman asserted.

Processing of unreadable input is handled in one of three user-specified and interchangeable modes: video display of single character images; contextual display of the entire line wherein the unrecognizable character is to be found; and a combination of single character with total line display, the spokesman said.

The system also allows the user to designate one data-entry station as a correction unit with the operator making corrections to all unreadable input. If the operator cannot determine the correct input form, he can store that record for future consideration without stopping the flow of input to the system, the spokesman said.

With eight CRT keystations, the key-to-disk system costs from $73,160 and leases for $1,780/mo, plus maintenance. Additional key stations cost $2,630 each and lease for $65/mo, plus maintenance.

Three Models

The Input 80 OCR unit is available in three basic models – A, B and the recently introduced lower-priced Model C.

Cost of the Model C with a single-font recognition capability is $259,000 with a lease price of $6,275/mo, plus maintenance. The Model C with a multifont capability costs $296,000 and leases for $7,175/mo, plus maintenance.

First deliveries of the total system are scheduled for June 1973 from P.O. Box 22307, 75222.

Off-Line Printer Shown by MDS

HERKIMER, N.Y. – Mohawk Data Systems is closing the gap between its present 15 char./sec and 300 line/min off-line printers with a new offering rated at 100 char./sec.

The MDS 1310 is a fully buffered matrix printer operated off-line from one of several Mohawk data recorders, a firm spokesman stated.

The unit features a 64-character print set, 132 char./line capability at 10 char./in. and can accommodate 1- to 6-part forms from 4 in. to 14-7/8 in. in width.

Data is transferred from the data recorder to the 1310 by a cable connection with an out-of-forms detection feature of the system, he continued.

The off-line printer requires no user programming, and is compatible with magnetic tapes generated by most computer systems, the spokesman added.

The 1310 is equipped with all necessary operator controls for form adjustment, print density and system operation, he concluded.

Printer price is $7,400 with a lease charge of $185/mo. The data recorder is priced separately. Deliveries are set for April 1973 from Corporate Highway, 13350.

Process Control Mini Repackaged

IRVINE, Calif. – Microdata Corp. has repackaged its Micro 400 mini into a lower-cost machine designed mainly for process-control applications.

The 400/10 includes several standard features that were previously options, including powerfail/autorestart, real-time clock, hardware-priority interrupt, DMA channel and hardware index register.

The 8-bit core memory has a 1.6-μsec cycle time and is expandable to 65K bytes. Optional interfaces and peripherals are also available.

A typical system, including the CPU, 4K of memory, desk-mount enclosure, power supply, system control panel and supporting software, costs $3,200.

Delivery is 60 days from 17481 Red Hill Ave., 92705.

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Conference, Seminar Aimed at COM Users

NEW ORLEANS – The Fourth Semiannual Computer Micrographics Technology (Comtec) conference, Feb. 7-9, will focus on the impact of computer output microfilm (COM) on users.

In addition, newcomers to the COM field may attend a two-day educational seminar Feb. 5-6 at the same location as the conference, The Fairmont Roosevelt Hotel. This seminar is designed to give the novice a basic understanding of concepts of COM, for a cost of $10. Discussions will focus on installation and operation considerations, systems analyses considerations, and applications.

Conference Sessions

In the leadoff conference session, Bert Frawley of Information International, Inc. will speak on the "History of COM." Paul Wailes of Computer Systems Inc. will discuss "the image of microfilm," after which the conference will split into two groups, those interested in scientific and graphics applications and those interested in commercial uses of COM.

Among the topics to be discussed in the scientific area are: graphic art forms, design and editing, by Gene Reese, Aerojet Nuclear Corp.; and device-independent graphics software, by Glenn Stith of the Amoco Research Center.

In the commercial group, Ken Kopald of U.S. Microfilm Sales Corp. will discuss "duplication in the COM environment," and Rodd Exelbert of *Information and Records Management Magazine* will look at "COM and its relationship to the end user."

Speakers will discuss what impact COM has had in such areas as banking, manufacturing, petrochemicals, aerospace and service bureaus. Other topics include implementing COM systems, film-quality control, system-design considerations and how to maximize cost savings associated with COM.

In a "Vendor Carnival," member vendors may explain their products. Rick Cooper, Comtec program chairman, may be reached through Pertec Corp., 235 W. MacArthur, Oakland, Calif. 94611.

Societies/ User Groups

CAI Group Sets Winter Meeting

SAN FRANCISCO – The Association for the Development of Instructional Systems (Adis) will hold its winter meeting here Jan. 30-Feb. 1.

Adis is an independent organization of about 400 members concerned with computer-assisted instruction (CAI) in all its ramifications.

Registration is $15 for members, $20 for nonmembers. For more information contact: Adis, P.O. Box 1403, Los Gatos, Calif. 95030.

Societies Have Integrated Plan To Upgrade DP

HUDSON, Mass. – An integrated plan to upgrade data processing practice over the next five years has been announced by the Society of Certified Data Processors.

The plan calls for separate upgrading of DP practitioners, standards, services, suppliers, schools and DP societies.

Each of these various areas will be reviewed at a separate annual public conference. All the comments and complaints from the previous year will be considered.

Any action or recommendation proposed by conference attendees will be published immediately after the conference. The appropriate societies can then implement the recommendations or take time to study the proposals further.

The integrated plan evolved at an August meeting in San Diego between the representatives of a number of DP societies including the Society of Certified Data Processors, the Society of Professional Data Processors and the Society of Data Educators, and some individuals.

At that time a "Declaration of DP Dependence" was drawn up and adopted. It calls for all professionals in DP to work together to improve the quality of data processing in the U.S.

The American Institute of Data Professionals, currently operating as a subcommittee of the Society of Data Educators (SDE), has been suggested as the implementor of the plan.

The institute would be comprised of DP professionals, rather than computer equipment manufacturers and other industry groupings. Dr. Enoch Haga, executive director of the SDE, is acting president of the institute.

Comments on the plan are invited. Copies of the whole plan or of any section (schools, services, societies, supplies, practitioners, etc.) are available for $2 for the complete plan and $1 for any specified section from Ken Lord, Society of Certified Data Processors, 38 Main St., 01749.

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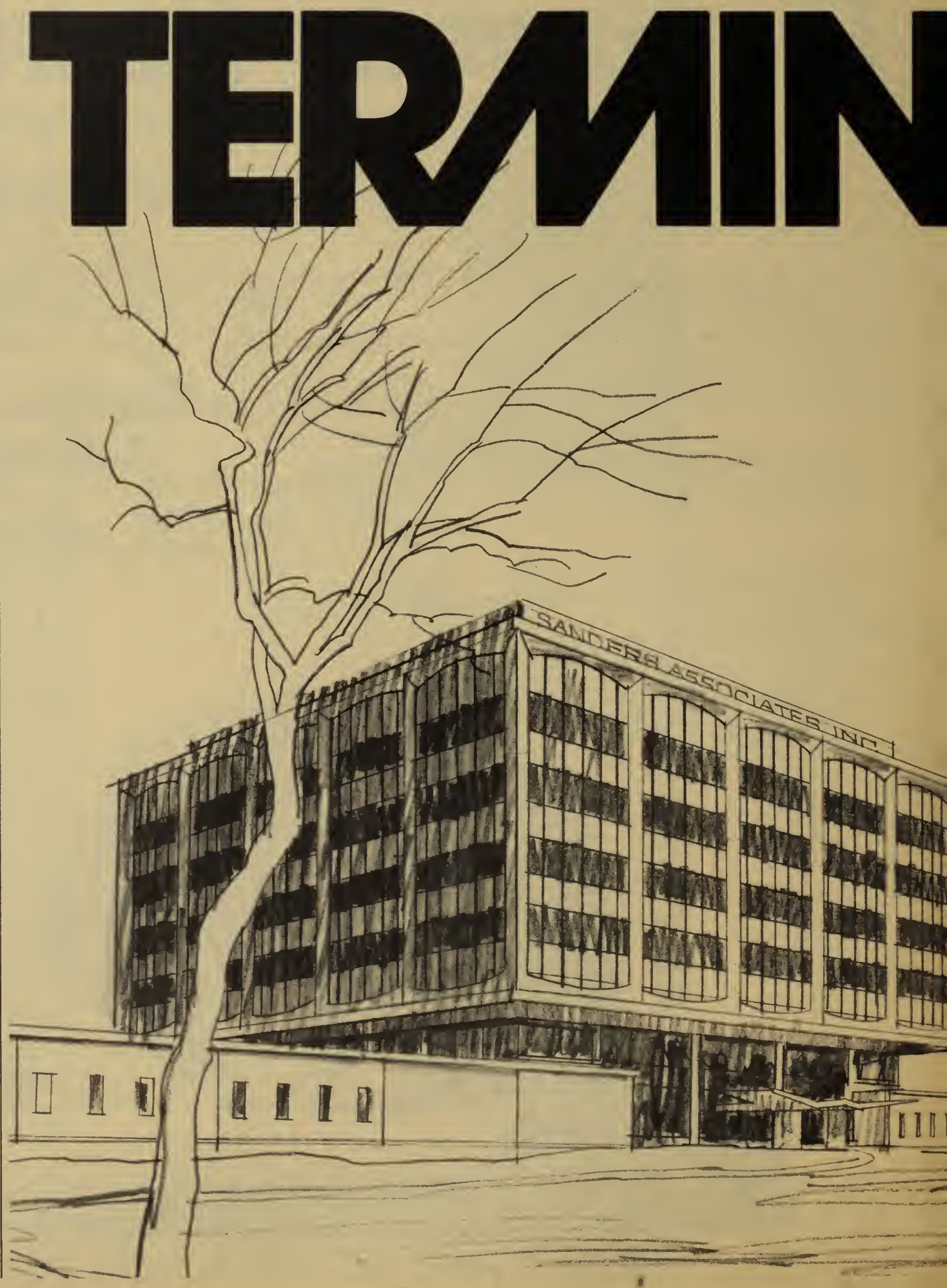

No Place to Call HIIS Own

WELLESLEY, Mass. – The Honeywell Institutes of Information Science (HIIS), like so many programming schools before them, are being phased out of operation as current classes come to a close.

By mid-year, all of the institutes – in New York, Los Angeles, Boston, Detroit and Chicago – will be shut.

Enrollments have picked up in the past year, but Honeywell now plans to market classroom materials to colleges, junior colleges and high schools, instead of teaching courses commercially itself, according to Robert Mose, director of marketing education and services.

The institutes have had three separate curricula: one for college graduates; the other two for high school graduates seeking a start in programming or operator training.

Mose and other Honeywell spokesmen stressed that the institutes are separate from the educational support provided as part of Honeywell computer sales support. Neither the classes available to users nor their bundled status is affected by the HIIS closings, the firm said.

PCC Uses Free-Style Tabloid Format To Jolt Student, Teacher DP Thinking

By Don Leavitt
Of the CW Staff

MENLO PARK, Calif. – In contrast to many slick-paper pedagogical journals, *People's Computer Company* is a free-wheeling, tabloid-size newspaper that could be mistaken for junk mail at first glance.

But the contrast is perhaps more apparent than real. Sprinkled liberally with stars, arrows, fanciful calligraphy and cartoon figures, PCC (vol. 1, no. 2), still has a substance that belies its "underground" appearance.

The paper was started last fall by Dymax, a teaching and software firm, to help readers learn

Education

how to use computers, and how to buy minicomputers. It also lists books, films and music and "tools of the future," all with some relationship to computers.

But more than anything else, "editor" Bob Albrecht explained, PCC is a newspaper about having fun with computers. They needn't be, and shouldn't be, objects of fear, especially to the eight- to 18-year-old students, and their teachers, to whom PCC is primarily addressed.

PCC and Dymax generally advocate the use of Basic for the youngsters and several game-type programs are in the current issue. The authors indicate what mini the programs run on and, in some cases, what changes would be required to put it on a different machine.

As long ago as 1965, Dymax organized a group to protest oversophisticated programming for schoolagers, and the Society to Help Abolish Fortran Teaching (Shaft) is still active. A major portion of the current issue is, however, devoted to a serious if somewhat rambling "polemic" explaining what author Marc LeBrun sees as flaws in Basic, both as an educational tool per se and as an example of "computer science."

Detailed Pricing

Continuing a presentation started in the first issue, on the Huntington Project funded by the National Science Foundation and conducted at State University of New York at Stony Brook, PCC provides a detailed price list of the simulation programs and related manuals, now being distributed by DEC.

The editors also provide a page of terminal terminology, distinguishing between hardwired, single-user "dial-up," and multiple-user "multiplexed" terminals. But they also illustrate a storage cabinet from Sears which they use for paper-tape storage, and they describe (tongue-in-cheek) how a movie projector reel can be used as a paper tape winder.

Mixed in with such patent nonsense, PCC notes that in the next few issues space will be given to discussions of how to write bid specifications for minicomputer systems for classroom use. The editors intend to describe some of their own experiences in this area, but they are seeking contributions from others.

They are interested in both hardware and software specifications, and expect to identify equipment or programs by name if that is deemed appropriate.

Dymax will publish PCC five times a year, and it is available on a $4 subscription, from P.O. Box 310, 94025.

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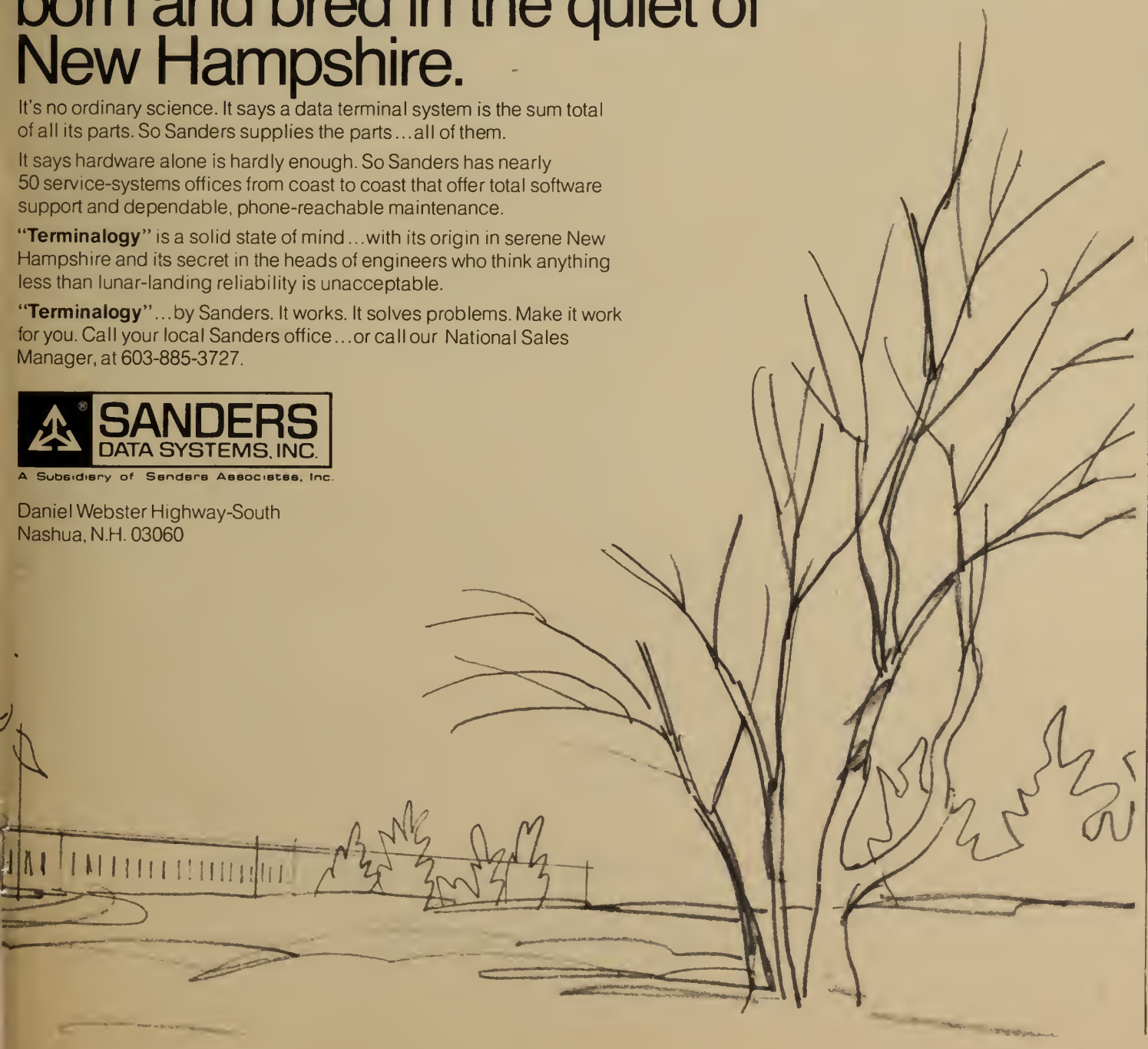

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If you'd like to see Multics demonstrated, arrangements can be made through your nearest Honeywell office. Or for more information write: Honeywell Information Systems (MS061), 200 Smith Street, Waltham, Massachusetts 02154.

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Mini Plots Furniture Part Cutting

RALEIGH, N.C. – A minicomputer is making calculations that will help furniture manufacturers get more usable wood from the hardwood planks they cut into furniture parts.

The mini is part of a lumber-scanning system developed jointly by North Carolina State University's School of Forestry and Technology Unlimited Inc., a Raleigh-based engineering firm. The work was done under a grant from the International Research Institute of the National Furniture Manufacturer's Association.

"When hardwood comes into a furniture company's rough cutting mill, a cutter looks at each board and in a few seconds tries to determine the best way to cut it to get the greatest number of defect-free pieces," A.G. Mullins of NCSU said. "Because he has so little time, he probably does not get the maximum yield from that piece."

Spotting Defects

With the computerized systems, an inspector circles defects in the wood with fluorescent paint and clamps it into a scanning bench. A scanning head with 128 photocells travels the length of the board and transmits an image of the board and the location of the defects to a Data General 800 mini.

When the scanning head reaches the end of the board, the mini computes the cuts that will get the most usable wood from the plank. The computer considers only sizes previously entered by the mill foreman. "The company using the system makes up a cutting list and enters it into the system," according to David Cox, Technology's president.

Cox said that after the computations are done, the scanning head returns to its original position, spraying the cutting lines as it travels. The marked plank is then cut manually.

Significant Saving

Mullins said the system can give furniture companies a significant cost saving. "For instance, if a company is cutting 20,000 board feet of wood per day, it probably is spending about $6,000 daily for wood," he said.

"Half the wood is usually unusable, which means the company actually is paying $600 per 1,000 board feet for the final parts. By increasing the yield from 50% to 55% with the computerized system, a company can save $600 per day, or $3,000 per week. This adds up to a saving of $156,000 per year," Mullins said.

The computer room creed is now a software package.

Tape Management Software (TMS) is a new package that protects all of your valuable data automatically.

It was developed to make sure that tapes couldn't accidentally be clobbered. But it does much more.

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University Centers Becoming Outdated, NSF Seminar Told

RICHMOND, Va. – A university computer center may be as outdated in a few years' time as a university electric power plant is today, according to some of the participants in a recent National Science Foundation (NSF)-sponsored seminar here.

Dr. Walter F. Freiberger, professor of applied mathematics at Brown University, was one of some 40 computer users, scientists and administrators who attended the two-day meeting organized by the Interuniversity Communications Council, Inc. (Educom).

Freiberger said present university computer systems could become outmoded as a result of an expanded research program conducted by NSF. These studies, he said, could lead to the development of a National Science Computer Network linking universities, colleges and other institutions in support of research and education.

To get advice on the technical and organizational problems which would have to be faced before such a network could become a reality, the NSF asked the Educom group to prepare a report to be published this spring.

"This report," Freiberger said, "will study the many considerations involved in the establishment of a linking computer network."

"It is likely," the Brown professor concluded, "that the new NSF program will lend new impetus to such experiments, which may lead to more versatile computer services as well as economics in computing costs for the participating institutions."

Aussie Builders Solve Problems Quicker

SYDNEY, Australia – Builders at the University of New South Wales School of Building can use a time-sharing terminal connected to a central computer for quick solutions to everyday problems like tender evaluation, cost control, resources scheduling, job-supervision, feasibility, accounting and planning.

The head of the School of Building, Professor Emery Barlint, said the minimum cost to the builder of using the terminal probably would be around $3,125 a year, half for rental and half for computer time.

On these figures, he pointed out a builder could solve quite a few problems. "You would have to set this cost against the savings – not only in manpower but in time," Barlint said.

COMPUTER INDUSTRY

CI Notes

IBM Readying New Memory?

NEWTON, Mass. – Several industry sources indicate IBM is about to announce a major new peripheral, either an extra-high-speed disk or a more exotic storage device. The device apparently will be compatible with the 360 line, as well as the newer 370 CPUs.

One user reported his IBM salesman told him to "sit tight" rather than make any decision on what current peripherals to get to upgrade his 360.

When the user protested he would need the additional storage within six months, the salesman persisted in refusing to give any advice on current equipment, the user said. "Just wait," he said, "we'll be able to take care of you."

Guesses are that something faster than 3330 is in the offing, but that it is unlikely to be a drum, which tends to be too big for the amount of storage it provides. At least one user feels the new unit will be a mass storage device utilizing laser or optical memory technology.

CIA Comes Up With IBM Plan

WASHINGTON, D.C. – The Computer Industry Association has agreed on a plan for early relief in the government's case against IBM.

The plan agreed on here recently has been submitted to the Justice Department which is studying the proposals. Details will be publicly released later.

Supershorts

Memorex has started volume shipments of the Memorex 3670 Disk Storage Subsystem. First installation of a 3670 has been made at Reserve Life Insurance Co. in Dallas.

– – –

Computer Usage Co. has signed an agreement with the Fireman's Fund American Insurance Companies under which the two companies will continue to cooperate closely in applying their joint experience "to the accelerated development of information systems technology" at Fireman's Fund.

– – –

Logicon, Inc. has announced formation of a new subsidiary, Logicon Computer Products, in which all of Logicon's commercial computer product development, manufacturing and marketing operations will be concentrated.

– – –

Computer Sciences Corp. has signed an agreement in principle for the sale of Commonwealth Services, Inc., its wholly owned consulting and engineering subsidiary, to Gilbert Associates, Inc. of Reading, Pa.

– – –

Signetics Memory Systems, Inc. has decided to lease its integrated-circuit manufacturing facility to Signetics Corp. and to focus primarily on its systems business.

Industry Wonders

How Will Other IBM Suits Be Affected?

By E. Drake Lundell Jr.
Of the CW Staff

MINNEAPOLIS – After the initial surprise, industry reaction to the Control Data-IBM out-of-court settlement of their antitrust action was mixed last week with most sources agreeing that Control Data received a "good deal," but wondering what the move would mean to the government and Telex suits still pending aginst IBM.

"Receiving over $60 million in cash and the Service Bureau Corp. is not a bad deal," according to Dan McGurk, president of the Computer Industry Association.

Pressure on Government?

But, he noted, the dropping of the Control Data action will "place more of a burden on the government in their suit," since the government was relying heavily on Control Data to turn over documents it had gathered.

The separation of the service-bureau business, he added, was only one of the remedies sought by Control Data in its original suit, which had also sought to have IBM divest its peripherals operations and its software business.

Because of this, he said, Control Data must have thought the government would have a good chance of getting these actions through its suit so CDC could reach a settlement on favorable terms.

McGurk also said IBM "couldn't have been terribly confident of the outcome" if the suit had gone to trial or it wouldn't have given away so much in the settlement.

"It looks like they want to settle all of the suits against them out of court," he stated, noting the IBM lawyers have said in court several times that they had hoped to negotiate a settlement with the Justice Department.

He also noted the settlement would allow Judge David Edelstein, who is hearing the government's case against IBM, to set an early trial data in that action.

Before, Edelstein had to worry, McGurk said, about the conflicting dates with the Control Data action which was being heard by Judge Philip Neville in Minneapolis and which was scheduled to start Nov. 5.

"Now they are free to concentrate on the big one – the government's case. And at the same time, the government's major ally in the antitrust actions has dropped from the field," he added.

Tom O'Rourke, president of Tymshare and of the time-sharing section of the Association of Data Processing Service Organizations (Adapso), said he was surprised at the settlement, indicating Control Data accepted a lot less than it had originally sought.

But he stated the CDC action had seemed to get the government more interested in the case and had served to alert the computer community of the issues involved.

He did not think the tie up of SBC and CDC would change the business environment that much, noting the two organizations served different markets when separate.

"But it will be interesting to see how they put the two together," he noted.

A competitor to the newly emerged leader in the service-bureau business (see box) was a little more cautious.

"This obviously means IBM will be free to train all of its legal guns on the Justice Department and Telex suits," he claimed.

"This will definitely put more of a burden on them," he added. "It makes the government's case more manageable."

A lawyer active in the computer field agreed: The IBM legal team has been trying these cases all over the country, which has definitely made it hard for them to be as effective as possible in all of them.

Linkup Has $95-Million Value

MINNEAPOLIS – The linkup of the data-services business of Control Data with the Service Bureau Corp. has clearly resulted in the largest service-bureau company, a new entity that will probably be 50% larger than its nearest competitor, GE's Information Services Department.

The Service Bureau Corp. had revenues of $63 million last year, and the revenues for the Control Data Corp. entry into this market segment were set at $32 million during 1971 by International Data Corp., a market research firm. This means the combined operation has a value of around $95 million to $100 million yearly.

GE is estimated to have had revenue of approximately $60 million to $70 million – virtually tied with Service Bureau Corp. for leadership in this market segment before the IBM-CDC settlement.

However, in the growing time-sharing segment of the service-bureau business the new firm may be in a tight race with GE.

Industry sources indicated that revenues from time-sharing have passed the $50 million mark at GE, while Service Bureau had less than half that and CDC even less than that in this segment.

SBC, Cybernet Services Expected To Fit Together Especially Well

MINNEAPOLIS – Control Data emphasized last week that the tie-up with Service Bureau Corp. would complement its present service-bureau business – and many industry figures agreed.

"Not only will this be a substantial increase in our total data-services revenues, but the various kinds of data services offered by SBC nicely complement those offered by our Cybernet services," William Norris, CDC president, told stockholders.

"This means the individual segments of our total data-services business, such as time-sharing, local and remote batch and transaction-oriented software will each be at more balanced as well as at more profitable levels," he added.

Industry figures agreed, pointing out that SBC had a strong foothold in the local batch and time-sharing markets, particularly in the business DP arena. On the other hand, Cybernet services were more oriented toward remote-batch processing and found their greatest strength in scientific and engineering applications.

"SBC and our Cybernet services also fit together particularly well in market areas served. There is a relatively small amount of overlap in the type of applications processing offered by SBC and Control Data," Norris noted.

"On the other hand," he added, "our basic customer profile is quite similar as to size and nature of corporations served. This means in combination that we will offer more complete service or 'product line' to all customers."

Economies of scale and resource sharing "will benefit both Cybernet and SBC operations," Norris added, noting that "a prime example of this would be sharing of communications costs which are a major expense item in any network."

Norris also said the take-over of SBC would double the number of salesmen in the field selling data services.

Other industry sources said they felt that if Control Data can successfully integrate the two service operations into one unit it could achieve the economies of scale mentioned by Norris.

But, one warned, "it will not be an easy job to tie the two together. They have a different orientation and serve different markets, not to mention different hardware."

If the move is successful, however, he said the combination could result in a firm much stronger than the two individual parts.

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Poland Plans Nationwide System, and Singer Helps

Special to Computerworld

WARSAW – Consumers in Poland may be getting major breaks in coming years through an on-line nationwide data system designed to streamline that country's bureaucracy and economy.

Some of its planning may reflect experience gained by Sam Harvey, a veteran systems designer, in creating a similar data network for the Singer Corp.

Harvey, Singer's systems vice-president and director of retail information systems, was invited to come to Warsaw by the National Office of Informatics to help plan the system's conceptual design. When completed, the "Infostrada" network will link all Polish computer installations into a single multiprocessing network.

The National Office of Informatics is Poland's top EDP organization. Staffed by 120 young technicians, it has ultimate authority over all computer operations, planning and procurement. Its director, Dr. Andrzej S. Targowski, is the country's leading writer on the uses and potential of automation.

130 Computers Installed

Targowski's subject is still new in Poland, which has less than 130 computers installed. Most are used for scientific and engineering computing and, until recently, all but one, an IBM 1400, were of Polish or Russian manufacture.

However, several U.S.-made third-generation systems have since been installed. A growing number of orders for Western equipment, including at least one for an IBM 370 configuration, have been placed, are being negotiated or are at the proposal stage.

Among them is one for Singer MDTS retail terminals and a Singer System 10 computer for a Warsaw department store, the first such system in Eastern Europe.

It will take five to 10 years to complete the Infostrada network, but each of its segments will go on the air separately as soon as possible – starting with the government batch-processing centers now serving local industry and administrations in 17 major Polish cities.

The basic system from the very start will deliver more computing power than would the sum of its parts, Targowski stressed. It will thereafter be expanded in modular phases to support progressively greater complexity.

Targowski has symbolically capped his continuing drive for government support and cooperation by placing a computer terminal on the desk of Polish Prime Minister Anton Gierek.

Change Desirable

Change is also the goal of the young Polish planners. They do not share the fears of automation frequently held in the West.

Instead, Targowski sees in the ready availability of detailed and accurate data a force for liberalization and efficiency in a society where the government is the only employer.

Extensive, easily accessible data files will, he believes, help make the five-year plans which govern the nation's economy more realistic and, hence, have a positive effect on the well-being of Polish citizens.

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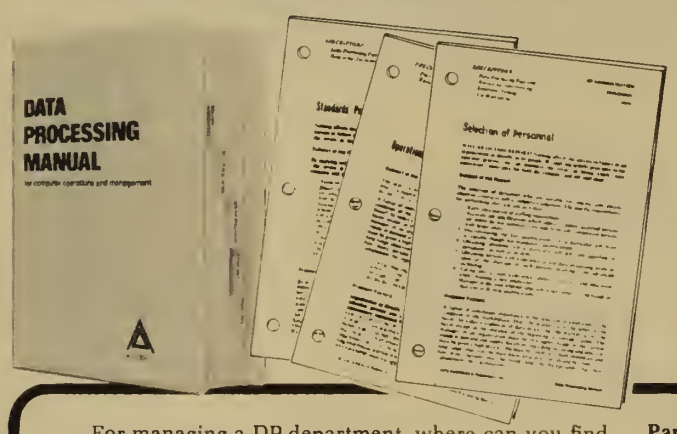

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Orders & Installations

Plymouth Shops, Inc. has ordered a CS-1400 Credit Authorization System from Datatrol, Inc.

Ingersoll Milling Machine Co., Rockford, Ill., has installed a Xynetics, Inc. 1100 plotting system linked to an IBM 1130. The system draws tool layouts and checks prints and finished drawings of gear trains.

The City of Jackson, Mich., has ordered a Univac 9214 B system to handle water and sewer billing, property tax calculations, cash-flow analysis, police accounting and income-tax preparation.

The National Aeronautics and Space Administration has ordered a Xerox Sigma 5 system, valued at $955,000, for use in its Atmosphere Explorer satellite program.

Optimum Systems, Inc., Palo Alto, Calif., has leased two IBM 360/65s, each with 2M bytes of core, from Datronic Rental Corp.

Westinghouse Electric Corp.'s Marine Division has installed a Burroughs B6700 to handle engineering and business applications in the production of propulsion equipment.

Goldman's, Inc. has ordered 69 point-of-sale terminals and an NCR 725 in-store computer from NCR.

PHI Computer Services, Inc. is installing a second 1M-byte LCS Ampex core module to its existing 1.5M-byte IBM 360/65.

Daycon Management Consultants has installed a Burroughs B1700 to handle trade-union bookkeeping and fund accounting, as well as bond-market analysis and other applications.

Itel Corp. has replaced the IBM memory on an IBM 360/67 at Bell Laboratories, Naperville, Ill., with 1M-byte of monolithic main memory.

Auto-Data Services, Inc. has installed an AU 150 Data Entry System from C3, Inc., for use in school surveys and payroll maintenance.

The Maine Medical Center has installed an NCR Century 200 for accounts payable, labor-distribution accounting and payroll as well as patient billing.

Trans World Airlines, Inc. has ordered a Voice-Activated Encoding System from Threshold Technology, Inc. The system will be used for baggage handling.

The Data Processing Department of the City and County of San Francisco has ordered a dual Comten 45 computer communications message-switching system. The system will be used with the Computer-Assisted Bay Area Law-Enforcement System (Cable) and will also handle inquiries to local and national law-enforcement systems.

Jockey International, Inc. has installed a Burroughs B3500 system to handle sales reports, shipment statistical analysis, inventory control, credit analysis and general accounting.

Northwestern Steel & Wire Co. has installed a Univac Series 70/2 computer for applications including an open order master file, accounts payable, inventory control and management information.

The City of Louisville and Jefferson County, Ky., have jointly ordered an Ampex Videofile information system to handle the consolidation of city/county police files.

Independent Maintenance Industry Seen Surpassing $2.4 Billion Mark by 1980

NEW YORK – Revenues in the independent computer/communications maintenance business should increase from $160 million in 1972 to over $2.4 billion by 1980, according to Frost and Sullivan, an industry research firm here.

The report, which noted independent maintenance is presently "an industry in formation," said that if all computer communications maintenance is considered, the total comes to $14.4 billion in 1972 and will grow to $26 billion by 1980.

Of course, most of the market is dominated by IBM and AT&T, the firm noted, so the share available to the independent firms will account for less than 10% of the total by 1980.

Waiting to Jump In

All together there are approximately 40 firms now in the independent maintenance business in both the computer and communications fields, the firm said, adding that around 30 more firms are "poised on the brink of possible involvement."

Presently, independent maintenance on computer systems is valued at $28 million, Frost and Sullivan said, but it predicted this would grow to $500 million by 1980.

Terminal maintenance by independents accounts for $28 million of the present independent business, but this will reach $190 million at the end of the decade.

Communications equipment now accounts for $100 million of the independents' business and is expected to grow to $1.6 billion during the same time span, Frost and Sullivan said.

Local Business Makes Good

But the study noted "the major business potential for the independents is derived at the local level," indicating localized operations are perhaps the best for firms entering the business.

The firm also noted that since the maintenance business is complex this could cause severe problems for firms just getting into the market if they do not prepare well for the move.

But the drawbacks to the firm entering the field are more than offset by the expected large growth, the firm indicated.

The Computer Caravan welcomes

AT&T

as an exhibitor in the 1973 Spring Caravan.

AT&T will feature the high-speed "dataphone 4800", first in a new family of data sets from the Bell System. The 4800 data set was designed for economical transmission at 4800 b.p.s. over basic unconditioned private line facilities.

Also on display will be the Bell System's 85 A-1 Selective Calling System for polling applications. The system is a quiet, efficient way of information movement, generating management advice and systems reports in real time.

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Contracts

Computer Sciences Corp. has been awarded a $2.1-million Air Force contract to provide systems engineering and hardware and software to integrate the World-Wide Military Command and Control System (Wimmix) with the existing system at Strategic Air Command Headquarters, Offutt Air Force Base, Neb.

Mohawk Data Sciences has received a $4.3-million contract to supply the Atomic Energy Commission with terminals for the Secure Automatic Communications Network (Sacnet). Mohawk will provide site-maintenance support for the system until 1980.

TRW Inc. and its Swedish partner, Asea, have been awarded a $3-million contract by the Swedish State Power Board for a Totally Integrated Data System for electrical power production and power system control. The system will involve computers at 20 locations, linking 150 power stations and transformer substations.

Systematics, Inc. has agreed to provide facilities-management services to the National Bank of Ypsilanti (Mich.) and the Owosso Savings Bank.

Health Central, Inc. has contracted with the Standard Register Co. to install a hospital information system.

Infodata Systems Inc. has been awarded a contract by the U.S. Office of Education for computer production control and systems-engineering services.

R-T-W Computer Network Corp. has signed a three-year renewal contract with Catalina and Cole of California for DP services.

Eastern Airlines has leased IBM 370 equipment valued at $17.5 million through Management Data Corp.

Data Architects has received a $650,000 one-year contract for facilities operation and management of the Criminal History Record Conversion System for the Commonwealth of Massachusetts.

University Computing Co. has signed a six-year facilities-management contract with Security Bank & Trust Co., Michigan.

Chilton Corp. has been selected by the Credit Bureau of Baton Rouge, Inc. for a five-year contract to automate the bureau, train bureau personnel and provide necessary DP services.

The U.S. Environmental Protection Agency has awarded a $67,000 contract To Systems Control, Inc., Palo Alto, Calif., for a nine-month study to model the Spokane River in western Idaho and Washington.

If your company has an IBM 370 computer system on order or is considering ordering one in the near future, explore the leasing terms available from DPF.

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So, you see, the short-term operating lease did not die with the advent of the 370. It is alive and well at DPF. Why not get the full details by contacting Mike Swords, our National 370 Sales Manager at Hartsdale, or one of our three Regional Managers: Tony Pintauro, New York, (212) 688-7601; Bill Drew, Chicago, (312) 297-4620; Harry Carr, Los Angeles, (213) 478-9821.

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Disk System Field-Expandable

SANTA ANA, Calif. – Remex has introduced a series of 300M-bit memory systems for the small-systems designer.

The field-expandable 3320 disk systems, are available in four configurations: the 3320-1 in 87.5M bits, the 3320-2 in 175M bits, the 3320-3 in 267.5M bits and the 3320-4 in 350M bits.

The 3320 systems feature 192 track/in. and an average head-positioning time of 30 msec. Average rotational latency of the unit is 8.3 msec, with data throughput rates of up to 6.45 Mbit/sec.

Delivery is scheduled for June from 1733 Alton St., 92705.

New OEM Products

Microdata Offers Two Disk Drives

IRVINE, Calif. – Microdata Corp. has announced a series of disk drives for the minicomputer market. A newly developed positioning system combines with simplicity of design and modular construction to produce a mean time between failure of 5,000 hours, the firm claimed.

Two models are available. The Microdata Disk 8100/5 uses a single removable disk with 25M bits and costs $2,800 in OEM quantities. The Microdata Disk 8200/5 uses one removable and one fixed disk with a combined capacity of 50M bits and costs $3,100.

Track-to-track data-access time for both models is 10 msec maximum. Random move is 35 msec. Dimensions are 19 in. wide (standard Retma) by 25-1/2 in. deep by 8-3/4 in. high.

Computer on Chip Is Faster

SANTA CLARA, Calif. – Intel Corp. has introduced a monolithic 8-bit parallel central processing unit with a 12.5-μsec instruction cycle, a faster version of the Intel 8008 CPU introduced early this year.

Designed especially to handle large volumes of data, the Intel 8008-1 CPU can directly address as many as 16K 8-bit bytes stored in Intel RAMs, ROMs and shift registers. Combined with the memory devices, it forms MCS-8 microcomputer systems.

The CPU is a P-channel silicon-gate MOS chip containing an 8-bit parallel adder, six 8-bit data registers, an 8-bit accumulator, two 8-bit temporary registers, four flag bits and eight 14-bit address registers. It operates under a set of 45 instructions, has interrupt capability, operates asynchronously or synchronously and can perform as many as seven nesting subroutines.

Price is $90 in quantities of 100, and delivery is immediate from distributor stock, according to the firm at 3065 Bowers Ave., 95051.

Other OEM Products

Creative Magnetics, Inc. has a new line of 1/4-in. format read/write magnetic tape heads, available in eight different models ranging from one to four channels.

– – –

A new solid-state serial MOS delay line with a memory in excess of 20K bits in a 4-1/2-in. by 6-in. package is available from Melcor Electronics Corp., Farmingdale, New York, with a price of less than 1/2 cent per bit. The Model 2261 has data input and output compatible with DTL/TTL. The unit requires only a single clock and NRZ data.

– – –

The T-ACM, a Time Division Multiplexer channel card designed by Timeplex, Inc., Norwood, N.J., performs the functions of a standard asynchronous data channel card and also contains a complete 103 or 202 type modem. Prices start at $300.

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Boothe Loses $12.3 Million

SAN FRANCISCO – A $13 million depreciation charge on 360 equipment taken in the third quarter was just one factor contributing to the $12.3-million nine-month loss at Boothe Computer Corp.

The loss for the quarter totaled $13.6 million or $6.38 per share compared with the year-ago period when earnings were $680,000 or 32 cents a share. Revenue for the quarter declined, to $12.7 million from almost $15 million in the comparable 1971 period.

Boothe also wrote down in the quarter $950,000 goodwill for Systems Analysis & Research Corp. and $197,000 in research and development of Courier Terminal Systems. Boothe Airside Systems and Courier Terminal Systems sustained operating losses for the period.

Courier shipments for the first nine months of 1972 were 1,500 units compared with 939 units in all of 1971. But "since practically all deliveries are on one-year lease contracts, and cannot be recorded as sales, the company's monthly rental base of units delivered to date is not sufficient to allow profitable operations," Boothe continued.

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It Was an IBM Kind of Year—Records For Earnings, Revenues and Quarters

ARMONK, N.Y. – At the same time it was settling its antitrust lawsuit with Control Data Corp., IBM last week announced another record year for earnings and revenues.

The fourth-quarter income was up 11.2%, the firm said, on a rise in revenues of just 6%. Both marks set a record for any quarter in the firm's history, topping off another record-setting year.

The earnings were $340.4 million or $2.93 per share, up from $306 million or $2.66 per share the year before in the fourth quarter. Revenues in the quarter reached $2.52 billion, an increase from the $2.38 billion registered a year before.

Net income for the entire year was a record $1.28 billion or $11.03 per share, up 18.6% from the year-earlier figure of $1.08 billion. Revenue for the year as a whole reached $9.53 billion, up 15.2% from the $8.27 billion registered in 1971, the firm said.

The year-end figures showed that earnings from its foreign subsidiary rose to $686.6 million, a 20.7% increase over the 1971 figures of $568.9 million, IBM said.

The foreign operations accounted for 53.7% of the firm's total profits and its revenues of $4.15 billion accounted for 43.6% of the firm's total.

President Frank T. Cary said revenues from rentals and services rose over 9% during the year as compared with the figures for 1971.

This figure was due to "a continuation of a relatively high rate of discontinuances of leased equipment," Cary said.

In addition, Cary said the first full year of the delivery of the 370 system helped the firm set records for the amount of equipment delivered.

"As might be expected early in the life of a major product . . . a relatively high proportion of these installations was made on an outright purchase basis, as opposed to rental, contributing significantly to the increase of 15.2% in gross income," he added.

The firm also said it had made appropriate provision for the settlement of the Control Data suit in the fourth-quarter figures.

Burroughs Revenues Top $1 Billion Mark

DETROIT – The ninth-consecutive record-breaking year in earnings and revenues at Burroughs Corp. saw the firm top the $1-billion revenue mark for the first time in history, according to Ray W. MacDonald, president.

And with the current "strong backlog" position and a "rising trend" in incoming orders, MacDonald predicted "continued good growth" in earnings and revenues in 1973.

For the year, the firm earned $87.5 million or $4.71 per share, an increase of 18% over earnings of $74.2 million or $4.03 per share registered in the 1971 year.

Revenues from worldwide operations reached $1.05 billion, a 12% jump over the $943.3 million in revenues registered last year.

MacDonald said revenue growth came both in the firm's overseas and domestic markets and the computer-equipment revenue was the fastest-growing product category, increasing 21% over the revenues from this category in 1971.

The growth in equipment rentals was up 19%, he said.

The fourth-quarter revenue, however, was up only 12% over the same year-ago quarter, due principally to a fourth-quarter charge against earnings of $4.8 million after taxes in connection with the settlement of the TWA suit, the firm said.

In the quarter, revenues were $330 million and earnings were $38.7 million. On a per-share basis, that amounted to $2.08, compared with 1971's $1.82 per share.

Macdonald said worldwide incoming orders in 1972 ran 33% higher than in 1971, with computer equipment a particularly strong category, rising 39% over the orders registered in 1971.

Worldwide backlog at the end of the year was also at record levels, according to MacDonald.

Randolph Buyer Assured Income

BOSTON – Under terms of First National Boston Corp.'s agreement to acquire the 360 inventory of Randolph Computer Corp., Randolph's parent, Travelers Corp., is guaranteeing rental income to assure First National of recovering its $32-million cash investment in 27 months.

An additional $29 million in notes is payable only from rental income generated after the cash has been paid.

Firstbank Financial Corp., a subsidiary, will hold the computer-leasing assets, and J.M. Randolph & Associates has been set up to administer and market the equipment.

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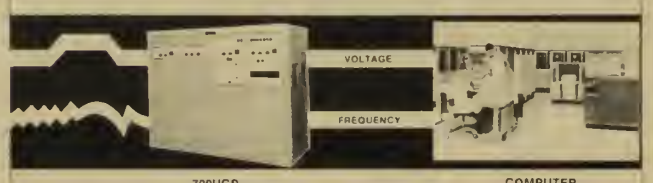

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Western Union Computer Utilities, Inc., 609 South Andrews Ave., Fort Lauderdale, Florida 33301.

Western Union Computer Utilities Inc.

5561

TRADE★QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass 02139

CLOSING PRICES THURSDAY, JANUARY 18, 1973

EXCH		1972 RANGE (1)	CLOSE JAN 18 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	2	- 1/8	-5.8
A	APPLIED DATA RES.	3- 7	3 5/8	- 1/8	-3.3
O	APPLIED LOGIC	1- 4	2 3/4	0	0.0
N	AUTOMATIC DATA PROC	72- 99	92	-2	-2.1
O	BRANDON APPLIED SYST	1- 2	3/4	- 1/8	-14.2
O	COMPUTER DIMENSIONS	4- 14	4	0	0.0
O	COMPUTER DYNAMICS	1- 4	1	0	0.0
O	COMPUTER NETWORK	3- 7	3 1/4	- 3/4	-18.7
N	COMPUTER SCIENCES	4- 10	5 1/8	+ 1/8	+2.5
O	COMPUTER TASK GROUP	1- 2	1 1/4	0	0.0
O	COMPUTER TECHNOLOGY	3- 8	2 1/2	- 1/8	-4.7
O	COMPUTER USAGE	7- 14	8 1/2	+ 1/8	+1.4
N	COMPUTING & SOFTWARE	12- 28	13	- 3/4	-5.4
O	COMRESS	1- 3	1	- 1/8	-11.1
O	COMSHARE	5- 10	8 3/8	+1	+13.5
O	DATATAB	4- 9	3 7/8	- 3/8	-8.8
O	EDP RESOURCES	2- 8	2 1/2	- 1/4	-9.0
A	ELECT COMP PROG	1- 5	1 5/8	- 5/8	-27.7
N	ELECTRONIC DATA SYS.	43- 65	53 1/8	-1 3/8	-2.5
O	INFORMATICS	5- 11	5 3/8	- 1/4	-4.4
O	I.O.A. DATA CORP	1- 3	3/4	0	0.0
O	KEANE ASSOCIATES	4- 7	3 3/4	0	0.0
O	KEYDATA CORP	7- 13	11 3/4	+ 1/4	+2.1
O	LOGICON	4- 9	4 1/8	- 3/8	-8.3
A	MANAGEMENT DATA	4- 10	4 3/8	- 3/8	-7.8
O	NATIONAL CSS INC	8- 36	35 3/4	+5 1/4	+17.2
O	NATIONAL INFO SRVCS	1- 5	2 1/8	+ 5/8	+41.6
P	ON LINE SYSTEMS INC	8- 28	26	+2 5/8	+11.2
N	PLANNING RESEARCH	5- 17	5 1/8	- 7/8	-14.5
O	PROGRAMMING METHODS	20- 25	24	0	0.0
O	PROGRAMMING & SYS	1- 2	1	0	0.0
O	RAPIDATA INC	5- 27	24	+1 3/4	+7.8
O	SCIENTIFIC COMPUTERS	2- 4	1 1/2	- 1/8	-7.6
O	SIMPLICITY COMPUTER	1- 5	3 1/8	- 3/8	-10.7
O	TBS COMPUTER CENTERS	3- 6	3 7/8	- 1/8	-3.1
O	TCC INC	1- 3	5/8	0	0.0
O	TYMSHARE INC	7- 11	10 5/8	+ 7/8	+8.9
O	UNITED DATA CENTER	5- 8	6	+ 1/4	+4.3
N	UNIVERSITY COMPUTING	8- 26	8 3/4	- 1/4	-2.7
A	URS SYSTEMS	6- 10	7	- 3/8	-5.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	28- 49	30 3/8	-1 1/2	-4.7
O	ADVANCED MEMORY SYS	12- 23	22 5/8	+2 5/8	+13.1
N	AMPEX CORP	5- 15	6	- 1/2	-7.6
O	ANDERSON JACOBSON	4- 8	4 7/8	+ 3/8	+8.3
O	BEEHIVE MEDICAL ELEC	1- 8	7 1/4	+ 3/4	+11.5
A	BOLT,BERANEK & NEW	5- 21	10 7/8	+ 1/8	+1.1
N	BUNKER-RAMO	9- 14	9 3/8	- 5/8	-6.2
A	CALCOMP	9- 25	11 1/4	- 3/8	-3.2
O	CAMBRIDGE MEMORIES	9- 15	13	-1 3/8	-9.5
O	CENTRONICS DATA COMP	6- 28	23	+2	+9.5
O	CODEX CORP	6- 25	17 3/4	+ 1/2	+2.8
O	COGNITRONICS	2- 5	2 1/4	- 1/4	-10.0
O	COMPUTER COMMUN.	1- 7	3 1/4	- 3/8	-10.3
A	COMPUTER EQUIPMENT	2- 4	2 5/8	- 1/8	-4.5
O	COMPUTER MACHINERY	7- 13	12 1/4	- 3/8	-2.9
O	COMPUTER TRANSCEIVER	2- 9	4 7/8	- 1/2	-9.3
A	COMPUTEST	3- 9	4	- 1/8	-3.0
N	CONRAC CORP	24- 39	28 3/8	-1 7/8	-6.1
A	DATA PRODUCTS CORP	3- 7	4	- 1/4	-5.8
O	DATA RECOGNITION	1- 5	1 1/4	0	0.0
O	DATA TECHNOLOGY	2- 5	3 5/8	+ 3/4	+26.0
O	DIZAN CONTROLS	0- 8	4	- 1/8	-3.0
N	ELECTRONIC M & M	3- 8	4 3/4	- 3/8	-7.3
O	FABRI-TEK	2- 5	4 3/4	+1 1/8	+31.0
O	GENERAL COMPUTER SYS	6- 16	7	-1	-12.5
N	GENERAL ELECTRIC	59- 74	71 7/8	-1 5/8	-2.2
N	HAZELTINE CORP	7- 13	7 5/8	- 3/8	-4.6
O	INFOREX INC	20- 36	19 5/8	-2 1/8	-9.7
O	INFORMATION DISPLAYS	1- 5	1 1/8	- 1/4	-18.1
O	INFORMATION INTL INC	8- 25	13 1/2	0	0.0
A	LUNDY ELECTRONICS	8- 14	8 1/2	- 3/8	-4.2
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	22 1/2	+2 1/4	+11.1
N	MOHAWK DATA SCI	9- 27	10 5/8	- 5/8	-5.5
O	ODEC COMPUTER SYST.	6- 12	4 3/4	- 1/4	-5.0
O	OPTICAL SCANNING	5- 16	5 1/4	- 1/2	-8.6
O	PERTEC CORP	7- 17	7 1/4	0	0.0
O	PHOTON	5- 15	5 5/8	- 1/8	-2.1
A	POTTER INSTRUMENT	7- 21	7 5/8	- 1/8	-1.6
O	PRECISION INST.	3- 13	3 1/4	0	0.0
O	RECOGNITION EQUIP	5- 15	7 1/4	- 3/4	-9.3
N	SANDERS ASSOCIATES	13- 21	15 3/8	-1 1/4	-7.5
O	SCAN DATA	4- 13	4	- 5/8	-13.5
O	STORAGE TECHNOLOGY	17- 39	29 1/4	-2 1/4	-7.1
O	SYCOR INC	7- 11	10 3/4	+1	+10.2
O	TALLY CORP.	8- 15	12 3/4	- 1/8	-0.9
N	TEKTRONIX INC	34- 64	51	-1 1/8	-2.1
N	TELEX	5- 15	5 7/8	+ 1/4	+4.4
O	WILTEK INC	10- 26	15 1/2	-1 3/4	-10.1
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	7 1/2	-1 1/4	-14.2
A	BARRY WRIGHT	9- 14	11 1/2	+ 1/8	+1.0
A	DATA DOCUMENTS	17- 26	21	- 5/8	-2.8
O	DUPLEX PRODUCTS INC	8- 16	9 1/2	0	0.0
N	ENNIS BUS. FORMS	6- 10	7 7/8	- 3/8	-4.5
O	GRAHAM MAGNETICS	15- 27	19	- 1/2	-2.5
O	GRAPHIC CONTROLS	11- 15	11 1/2	- 1/8	-1.0
N	3M COMPANY	76- 88	86 5/8	+ 3/4	+0.8
O	MOORE CORP LTD	42- 57	57	+ 1/4	+0.4
N	NASHUA CORP	48- 62	55 1/8	- 3/8	-0.6
O	REYNOLDS & REYNOLD	37- 77	47 1/2	-1 1/4	-2.5
O	STANDARD REGISTER	14- 20	19	- 1/2	-2.5
O	TAB PRODUCTS CO	14- 23	21 3/4	- 3/4	-3.3
N	UARCO	21- 28	21 1/2	-1	-4.4
A	WABASH MAGNETICS	6- 11	6 3/4	- 1/8	-1.8
N	WALLACE BUS FORMS	21- 26	25 1/2	+ 3/8	+1.4
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-230	228	+ 1/4	+0.1
N	COLLINS RADIO	14- 27	22	- 3/8	-1.6
N	CONTROL DATA CORP	43- 78	56 3/8	+ 3/8	+0.6
O	DATA GENERAL CORP	56-130	127 1/2	+2	+1.5
O	DIGITAL COMP CONTROL	5- 25	5 1/2	- 1/4	-4.3
N	DIGITAL EQUIPMENT	72-101	98 3/8	+1 1/8	+1.1
N	ELECTRONIC ASSOC.	6- 13	9	+ 1/2	+5.8
A	ELECTRONIC ENGINEER.	6- 14	8 5/8	- 3/8	-4.1
N	EONXBORO	23- 41	30 1/4	0	0.0
O	GENERAL AUTOMATION	13- 49	46 1/2	-1 1/4	-2.6
O	GRI COMPUTER CORP	2- 5	2 3/8	- 1/8	-5.0
N	HEWLETT-PACKARD CO	46- 94	90	-1	-1.0
N	HONEYWELL INC	118-170	133 1/2	+ 1/4	+0.1
N	IBM	333-429	428 7/8	+17 3/8	+4.2
O	INTERDATA INC	8- 16	11 3/8	-1 1/8	-9.0
N	MEMOREX	15- 38	17 3/8	- 1/2	-2.7
O	MICRODATA CORP	5- 10	9 7/8	+ 7/8	+9.7
N	NCR	29- 38	31 3/8	- 1/8	-0.3
N	RAYTHEON CO	27- 47	32	-1 3/8	-4.1
N	SPERRY RAND	30- 50	48 1/4	- 7/8	-1.7
A	SYSTEMS ENG. LABS	7- 16	7 5/8	0	0.0
N	VARIAN ASSOCIATES	14- 22	18 1/4	- 3/4	-3.9
N	WANG LABS.	23- 61	29 3/4	-1	-3.2
N	XEROX CORP	121-172	151 5/8	+ 3/8	+0.2
	LEASING COMPANIES				
A	BOOTHE COMPUTER	3- 18	3	- 1/8	-4.0
O	BRESNAHAN COMP.	1- 3	1 1/2	+ 1/8	+9.0
O	COMDISCO INC	3- 18	16 5/8	+ 3/4	+4.7
O	COMMERCE GROUP CORP	5- 11	5 1/2	- 1/2	-8.3
O	COMPUTER EXCHANGE	1- 3	5/8	- 1/8	-16.6
A	COMPUTER INVSTRS GRP	7- 14	7 1/4	-1	-12.1
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	8 1/8	+2 1/8	+35.4
M	DATRONIC RENTAL	2- 4	2 3/8	+ 3/8	+18.7
A	DCL INC	2- 10	2 5/8	+ 1/4	+10.5
A	DEARBORN-STORM	16- 26	23 1/4	-1 5/8	-6.5
A	DPA, INC.	5- 8	7 1/4	- 3/8	-4.9
A	GRANITE MGT	5- 11	5 3/4	- 1/8	-2.1
A	GREYHOUND COMPUTER	6- 11	5 7/8	+ 1/4	+4.4
A	ITEL	7- 12	11 1/8	+ 5/8	+5.9
N	LEASCO CORP	15- 24	15 3/8	-2 1/8	-12.1
O	LEASPAC CORP	6- 15	7 1/4	+ 1/4	+3.5
O	LECTRO MGT INC	1- 4	2	- 1/8	-5.8
A	ROCKWOOD COMPUTER	2- 7	2 1/2	- 1/8	-4.7
O	SYSTEMS CAPITAL	3- 20	12 1/8	- 7/8	-6.7
N	U.S. LEASING	19- 35	34 1/8	- 1/2	-1.4

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
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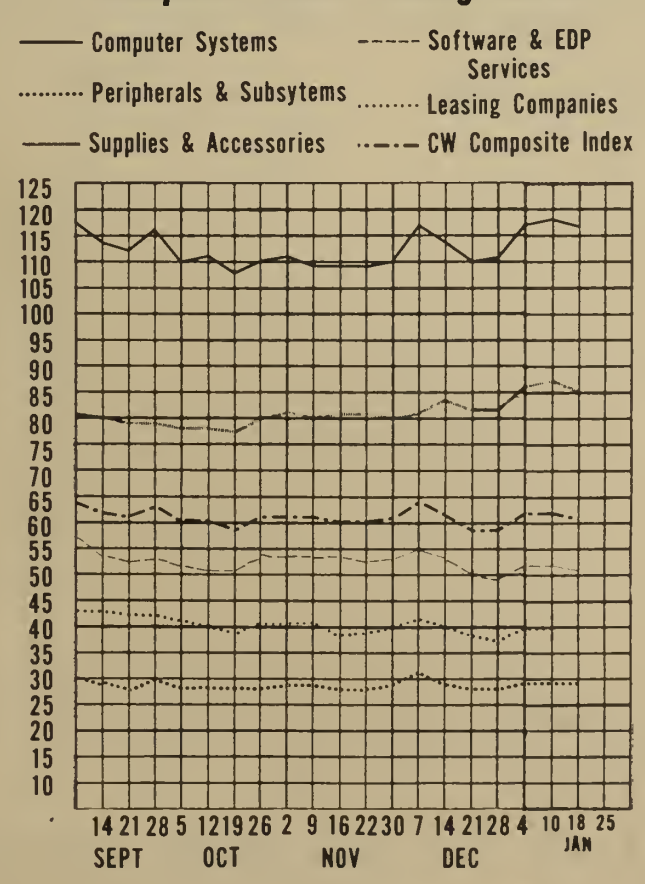
Computer Stocks Trading Index



Earnings Reports

COMPUTER DESIGN
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	.....	$.11
Revenue	$4,523,090	3,761,906
Earnings	(189,879)	136,121
9 Mo Shr	.....	.52
Revenue	11,289,717	10,614,552
Tax Cred	.....	79,000
Earnings	(431,874)	659,362

COMPUTER EQUIPMENT
Three Months Ended Sept. 30

	1972	1971
Shr Ernd	$.03	$.03
Revenue	4,543,000	4,501,000
Spec Cred	a32,000	b86,000
Earnings	60,000	88,000
9 Mo Shr	.18	.16
Revenue	15,185,000	14,606,000
Spec Cred	a149,000	b264,000
Earnings	445,000	408,000

a-In the quarter consists of tax credit and in the nine months includes gain on purchase of debentures and provision for loss on investments. b-Tax credit and gain on purchase of debentures.

ADVANCED MEMORY SYSTEMS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.38	.....
Revenue	12,834,000	$2,217,000
Spec Cred	a287,000	.....
Earnings	607,000	(1,753,000)
3 Mo Shr	.28	.....
Revenue	5,043,000	1,175,000
Spec Cred	a210,000	.....
Earnings	451,000	(328,000)

DATA-CONTROL SYSTEMS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$.05	.....
Revenue	5,191,502	$3,923,111
Spec Item	a14,500	b217,950
Earnings	44,386	(1,369,210)

a-Tax credit. b-Charge related to abandoned production facility.

DATA DOCUMENTS
Year Ended Sept. 30

	1972	1971
Shr Ernd	$2.02	$.163
Revenue	28,952,350	26,641,527
Tax Cred	45,000	32,384
Earnings	949,867	764,704

ADDRESSOGRAPH MULTIGRAPH
Three Months Ended Oct. 31

	1972	1971
Shr Ernd	$.29	$.17
Revenue	106,036,000	94,477,000
Spec Cred	a830,000	.....
Earnings	2,357,000	1,383,000

a-From sale of surplus plant in Teterboro, N.J.

HEWLETT-PACKARD
Year Ended Oct. 31

	a1972	1971
Shr Ernd	$1.42	$.92
Revenue	472,389,000	375,088,000
Spec Cred	b1,201,000	c1,101,000
Earnings	37,552,000	23,881,000

a-Preliminary. b-Gain from change in method of valuing inventories. c-Gain from revaluation of various currencies.

ADVANCED COMPUTER TECHNIQUES
Six Months Ended Sept. 30

	1972	1971
Shr Ernd	$.07	.....
Revenue	1,705,151	$1,202,139
Earnings	51,407	(48,134)

COMPUTER TERMINAL
Three Months Ended Oct. 31

	a1972	b1971
Shr Ernd	$.04	.....
Revenue	2,832,000	$720,000
Tax Cred	50,000	.....
Earnings	156,000	(607,000)

a-Preliminary. b-Restated.

SCAN DATA
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	$.06	.....
Revenue	2,023,508	$1,049,202
Tax Cred	42,582	.....
Earnings	102,254	(210,033)

a-Restated.

COMRESS
Three Months Ended Sept. 30

	1972	a1971
Shr Ernd	.....	$.02
Revenue	$1,484,800	1,085,800
bEarnings	(3,300)	107,100
9 Mo Shr	.04	.03
Revenue	4,776,800	3,569,000
Spec Cred	.....	c173,900
Earnings	246,400	190,800

a-Restated. b-Includes equity in loss of affiliates. c-Gain on sale of securities.

DELTA DATA SYSTEMS
Three Months Ended Oct. 1

	1972	1971
Shr Ernd	$.02	.....
Revenue	625,100	$250,500
Tax Cred	5,500	.....
Earnings	24,800	(131,300)
6 Mo Rev	1,137,700	805,800
Tax Cred	200	.....
Earnings	1,000	(120,700)

MICROFORM DATA SYSTEMS
Three Months Ended Oct. 27

	1972	1971
Revenue	$380,463	$150,561
Loss	358,706	647,259

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